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RHUS AROMATICA, AITON—FRAGRANT SUMACH.

Syn. Sweet Sumach, Stink or Skunk Bush.

BY HARRY WINSTON HARPER, PH.G.

From an Inaugural Essay.

Nat. Ord. Anacardiaceæ.

The fragrant sumach is a small aromatic shrub, not poisonous, growin dry, rocky soil, in hedges and thickets, in Canada and the United States. Its height varies from three to six feet; it is erect, sometimes decumbent, branching, glabrous. The stem has a large pith, of a pinkish color, and a thin circular layer of white wood, which is covered with a thin bark, the outer surface of which is of a brown-gray color, the inner surface yellowish-green. The leaves are alternate, petiolate, exstipulate and trifoliate, with sessile, dark green, rhombic-ovate, unequally cut-toothed leaflets, two to three inches in length; pubescent when young, thickish when old. The lateral leaflets are uneven at the base, while the larger terminal one is wedge-shaped. The flowers are in close aments preceding the leaves; yellowish, with a five-lobed glandular disk. The fruit is drupaceous, subglobular, one-fourth of an inch in diameter; scarlet, densely covered with purplish-red hairs, and incloses a roundish, slightly flattened, oblong putamen. It has an odor similar to that of rose geranium, and a pleasant acidulous taste, and ripens in May and June.

The roots are branched, vary in diameter from $\frac{1}{12}$ to $\frac{1}{2}$ inch, and contain a whitish ligneous meditullium interspersed with ducts, which are not apparent to the naked eye. The bark, which is the medicinal portion, is in quills, one to four inches in length, $\frac{1}{16}$ to $\frac{1}{2}$ inch in diameter, and from $\frac{1}{20}$ to $\frac{1}{12}$ of an inch thick. The outer surface varies in color from light to dark brown, and is marked with corky protuberances and transverse fissures. When the corky layer is removed the outer bark is brought to view, which is of an orange-red color, is longitudinally wrinkled and transversely fissured. The inner surface is

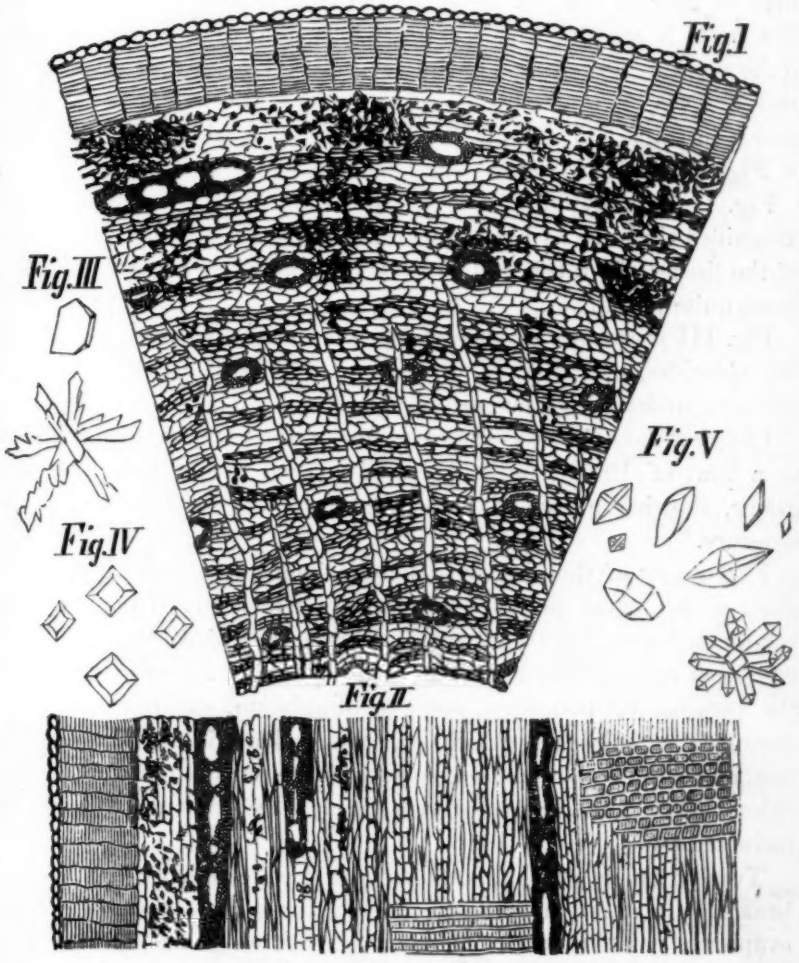
whitish or flesh-colored, and striate. The bark is brittle, breaks with a somewhat granular fracture, yields an ochre-colored powder, and has a distinct, rather pleasant odor, more marked when green than when dry; its taste is astringent, aromatic and slightly bitter when fresh, with a flavor peculiar to the plant from which it is derived. It should be collected in the spring of the year.

Leaves of Rhus Aromatica, *Aiton.*

Upon microscopical examination the bark appears to be radially and tangentially striate, and is marked throughout with oil tubes and crystals, as is shown in the accompanying drawing.

Fig. I. A transverse section of the bark magnified to about forty or fifty diameters. The epidermis consists of a single row of cells, the walls of which are of a dark brown color. The corky layer is somewhat lighter brown, and the cells number, radially, from sixteen to twenty-five; mostly, however, eighteen. The first layer beneath

the cork consists of three rows of flattened tangentially elongated parenchyma cells, followed by one of loose parenchyma and sieve tubes. The next layer consists of three rows of bast cells, interrupted



Bark of the root Rhus Aromatica, *Aiton.*

1. Transverse section.
2. Longitudinal section.
3. Crystals of phosphates.
4. Crystals of chlorides.
5. Crystals of calcium oxalate.

by oil tubes. The succeeding layers are composed of ordinary parenchyma, sieve tubes and bast cells, some of the rows of the latter being interrupted by oil tubes the same as those just described. The medul-

lary rays extend more than half through the bark and consist mostly of a single row of cells. The oil tubes are generally in the bast rows, arranged with some regularity. In some of the sections examined three or four of the oil tubes were found coalesced, as in Fig. I. The bark is studded with crystals, which seem to be mostly confined to the portion beyond the medullary rays. The crystals were examined under a high magnifying power, which showed them as represented in Figs. III, IV and V, the latter predominating, only a few of Figs. III and IV being clearly made out.

Fig. II. A longitudinal section of the bark, in a radial direction (magnified the same as Fig. I), showing the longitudinal arrangement of the tissues, oil tubes and crystals, sections of two medullary rays being quite prominent.

Fig. III represents crystals of the phosphates, Fig. IV crystals of the chlorides, and Fig. V crystals of oxalate of calcium as they appeared under a high magnifying power.

Chemical Investigation.—Five grams of the air-dry bark subjected to a heat of 100°C. until it ceased to lose weight weighed 4·651 grams, showing a loss of ·349 gram = 6·98 per cent. amount of moisture.

Five grams of the air-dry bark were incinerated, and yielded ·644 gram of ash, equal to 13·85 per cent., of which 16·967 per cent. was soluble in water, 74·007 per cent. soluble in hydrochloric acid, and 9·025 per cent. soluble in boiling sodic hydrate. An analysis showed the presence of potassium, sodium, aluminium, calcium and silica, combined as sulphates, chlorides and phosphates in the aqueous solution, and as phosphates and carbonates in the portion soluble in hydrochloric acid; the carbonates very likely were produced during the incineration.

Twenty grams of the powdered bark were exhausted with pure benzol by maceration and percolation; the percolate was allowed to evaporate spontaneously, yielding an extract weighing 1·272 gram = 6·36 per cent. This extract was treated with warm water, allowed to cool, filtered, and filtrate tested for alkaloids and glucosides with negative results. The undissolved extract was removed from the filters and dishes by solution in benzol, the benzol solution again evaporated to dryness, the residue treated with warm dilute sulphuric acid, allowed to cool and then filtered. The filtrate was tested for alkaloids and glucosides; negative results. The still undissolved residue was thor-

oughly washed with water to free from any adhering sulphuric acid, treated with absolute alcohol, filtered, and the filtrate evaporated. This left a soft oily mass, of an acid reaction, entirely soluble in ether, benzol, volatile and fixed oils, partly soluble in alcohol, sp. gr. ·817, and aqueous alkalies; it has a peculiar odor, and an acrid, somewhat bitter taste, similar to that of copaiba, is soluble in concentrated sulphuric acid, with a deep brown color; strikes a similar color with concentrated nitric acid, but is insoluble in it, and gives with concentrated nitric and sulphuric acids a red-brown color, which turns lemon-yellow. This substance was considered to be an oleoresin, as it left a permanent greasy stain upon paper (fixed oil), and when treated with alcohol, sp. gr. ·817, and the filtrate evaporated, left a residue of a resinous nature which gave reactions with sulphuric and nitric acids, the same as those noted above. The fixed oil was boiled with a solution of sodic hydrate, filtered and precipitated with a solution of sodic chloride; the result was a yellow-brown soap.

A fresh portion of the benzol extract was dissolved in ether, allowed to evaporate spontaneously, redissolved in ether and evaporated a second time, when the odor of butyric acid was produced. It was then treated with potassic hydrate, alcohol and sulphuric acid, and when heated the odor of ethyl butyrate was produced.

The drug exhausted with benzol was dried and treated with stronger alcohol until the percolate left no residue when evaporated; the entire percolate was carefully evaporated, the extract weighing 4·774 grams = 23·87 per cent. This extract was treated with several portions of absolute alcohol, sp. gr. ·7938 at 15·6°C.

A. Soluble in absolute alcohol.—Evaporated to dryness, powdered and treated with distilled water.

a. Soluble in water, acid reaction.

a[1]. *Precipitate by subacetate of lead.*—Ochre color; was washed, suspended in water, saturated with hydrosulphuric acid to precipitate the lead, filtered, filtrate boiled to free from H_2S; the amber-colored solution reduced Fehling's solution when heated, formed precipitates with solutions of gelatin, tartrate of antimony and potassium and ferric chloride, the latter giving a blue-black, which is altered only a very little upon boiling. These reactions show the presence of tannin, the reduction of Fehling's solution being due, probably, to a contamination with glucose. Negative reactions for alkaloids. The tannin thus obtained, after continued treatment with acids, gave reactions with

milk of lime, nitrate of silver and ferric salts, identical with those produced by gallic acid; this, therefore, seems to be a *gallotannin.*

a^2. *Filtrate from precipitate by subacetate of lead.*—The lead was precipitated by hydrosulphuric acid, the filtrate boiled to free from H_2S; concentrated and divided into several portions:

1. Acid reaction (from the acetic acid of the lead), mercurio-potassic iodide gave *no* precipitate; absence of alkaloids.

2. Solution of iodine in potassium iodide; no precipitate; absence of alkaloids.

3. Reduces Fehling's solution without heating; glucose.

4. Evaporated to dryness, the residue had a sweet taste and a somewhat aromatic odor; was soluble in water and alcohol and consisted of two portions, one soluble in a mixture of alcohol and ether (3 to 1), the other insoluble in this menstruum. Both reduced Fehling's solution without the aid of heat and were consideeed to be "extractive" matter and glucose.

b. Insoluble in water.

b^1. *Soluble in dilute sulphuric acid.*—Coloring matter only; soluble when heated, deposited upon cooling. Negative reactions for glucosides and alkaloides.

b^2. *Insoluble in dilute sulphuric acid.*—Entirely soluble in dilute ammonic hydrate, reprecipitated upon the addition of an acid. This was considered to be an acid resin; it was thoroughly washed and its characteristics noted as follows: Blackish-brown color, brittle, lustrous, opaque in mass, translucent in scales. Odor and taste similar to that of parched coffee; concentrated alcoholic solution has an acid reaction. Insoluble in cold water, ether, benzol and dilute acids; soluble in boiling water (reprecipitated upon cooling), alcohol and alkalies. Concentrated sulphuric acid dissolves it slowly; the solution is dark-brown at first, assuming a pinkish hue around the edges upon standing. Ferric salts give a black precipitate not unlike that produced by tannin. Its solution in alcohol is wholly precipitated by an alcoholic solution of acetate of lead, the precipitate being of a yellowish color at first, but changes to a dark-brown. The resin is dissipated at a red heat, and when boiled with dilute sulphuric acid, the solution treated with barium carbonate to get rid of the acid, the resulting solution does not reduce Fehling's solution—proving that the substance is not a glucoside.

B. INSOLUBLE IN ABSOLUTE ALCOHOL.

c. Soluble in water.

c^1. Precipitate by subacetate of lead.—Coloring matter only.

c^2. Filtrate from precipitate by subacetate of lead.—The excess of lead was precipitated by hydrosulphuric acid, the filtrate boiled, divided into three portions, two of which were tested for alkaloids and glucosides with negative results. The third portion was evaporated to dryness. A crystalline substance of an amber color remained, which, upon analyzing proved to be sodium and potassium salts together with a little organic matter.

d. Insoluble in water.

d^1. Soluble in dilute sulphuric acid.—Coloring matter only.

d^2. Insoluble in dilute sulphuric acid.—A small amount of "extractives" and color substances remained.

The drug previously exhausted with benzol and alcohol was exhausted with distilled water. An aliquot part of the aqueous solution was evaporated to dryness and the per cent. extracted by water estimated, which amounted to 4·85. The reserved solution yielded, with alcohol, a gummy precipitate which, with ammonic oxalate, was found to contain calcium. Coloring matter was also extracted by water.

The drug remaining after the above treatment was free from odor and taste, so it was not thought necessary to carry the analysis further.

A decoction of the fresh bark gave a blue reaction with solution of iodine in potassic iodide, indicating the presence of starch. The absence of starch granules in the microscopical sections is due to the fact that the bark from which they were made was previously *repeatedly* boiled with water to clear the tissues.

The bark treated with solution of potassic carbonate (to extract the organic acids) yielded an extract containing an *oxalate*, but free from malates and tartrates.

The fresh bark, when distilled with water, yielded a volatile oil, which, when first distilled has a disgusting odor resembling very much the odor of bed-bugs, but when the distillate is treated with ether, the ethereal solution allowed to evaporate, the oil remaining left in contact with the air for twenty-four hours, it acquires a pleasant odor, distinct in itself.

Recapitulation.

1. Moisture: 6·95 per cent.	
2. Ash: 13.85 per cent.	Sol. in H_2O. 16·967 per cent. (K and Na together with the radicals of H_2SO_4, HCl and H_3PO_4).
	Insol. in H_2O. Sol. in HCl. 74·007 per cent. (Al, Ca and a trace of Na with radical of H_3PO_4).
	Insol. in H_2O, and HCl. Sol. in Na OH. 9·025 per cent. (Silica).
3. Benzol extract: 6·36 per cent.	Consisting of volatile and fixed oils, resin, wax and butyric acid.
4. Alcoholic extract: 23·87 per cent.	Tannin, glucose, an acid resin, "extractive" and coloring matter.
5. Cold water extract: 4·85 per cent.	Gum and coloring matter.
6. Decoction:	Starch, etc.
7. Potassic carbonate extract: .	Oxalates, etc.
8. Distillation with water: .	Volatile oil.

Medical Action and Uses.—Rhus aromatica was introduced to the profession at large in the spring of 1878 by Dr. J. F. McClanahan, of Boonville, Mo., as "a remedy highly useful in the treatment of *diabetes, enuresis, hæmaturia, uterine hemorrhages, menorrhagia* and other excessive discharges, accompanied by a relaxed condition of the uterus, *diarrhœa* and other atonic diseases of the bowels." Drs. John Gray and F. McClanahan had used this remedy extensively in their practice in such cases as above mentioned with marked benefit, but left it for the son to bring before the public. Since its introduction many physicians have tested its virtues, and their statements corroborate those of the discoverers. That it is an efficacious remedy in the treatment of *enuresis* there can be no doubt, for the author of this essay has seen it tried with success in several cases. A tincture containing the oleoresin, acid resin, gallotannin and extractives of the crude drug and representing 4 troy-ounces to a pint of stronger alcohol may be made by macerating the ground drug in the menstruum for seven days, with frequent agitation and then percolating until one pint of tincture is obtained. It is obvious that preparations of Rhus aromatica should not be mixed with solutions containing salts of iron.

The dose of the powdered drug is from 20 to 60 grain (gm. 1·3 to 4·0); the fluid extract 5 to 40 drops (gm. ·3 to 2·5); the tincture 20 drops to a teaspoonful (gm. 1·0 to 4·0) given in water and repeated as often as necessary. As a topical remedy to control hemorrhage a decoction of the bark will be found efficacious.

In conclusion, I desire to state that the process followed in the chemical investigation was the one reported by Mr. Henry B. Parsons

in the "American Journal of Pharmacy," 1880, p. 210; the analysis was made in the laboratory of the Philadelphia College of Pharmacy, under the supervision of Prof. J. M. Maisch and Dr. F. B. Power, and I am indebted to Mr. F. L. Slocum for the use his of microscope, with which I have been enabled to produce the drawings of the sections.

NOTES ON THE XANTHORRHŒA RESINS.

By John M. Maisch.

Read at the Pharmaceutical Meeting, April 19.

At the last pharmaceutical meeting a resin was exhibited under the name of *gum acroides*, and it was stated to be a new Australian product. Shortly afterwards, during a visit to New York, I made some inquiries in relation to this supposed new commercial article and was surprised to learn that at one wholesale drug house it had been in stock fully ten years ago, and subsequently I learned from Mr. Chas. Bullock that a quantity of the same article had been on hand at the store formerly kept by Mr. Daniel B. Smith more than a quarter of a century ago. It was evident from the information received that the resin was not a new article in this country, and on examination numerous notices of it were found, from which it became evident that the appellation *acroides* is a corruption of acaroides, and that the resin is identical with Botany Bay resin, which name is better known, at least to the writer. Dunglison's dictionary says of the genus Xanthorrhœa: "There are several species. Two resins are obtained from them; one, the *yellow resin of Xanthorrhœa* or *of New Holland, resina lutea Novi Belgii, Botany Bay resin* or *gum, ac'aroid resin* or *gum, resina* vel *gummi acaroï'des*, which probably resembles tolu and storax in medicinal properties; the other, the *red resin of Xanthorrhœa* or *blackboy gum*."

This quotation gives the various synonyms of the substance in question and points also to its origin. A tolerably full account of it and the allied resin or resins may be found in Pereira's Materia Medica, in Guibourt's Drogues simples, etc. The following notes are compiled from these and other sources.

The genus Xanthorrhœa belongs to the natural order of liliaceæ, is confined to Australia and consists of shrubby or arborescent plants, somewhat palm-like in appearance and having at the summit dense tufts of very long, wiry, narrow, two-edged or somewhat triangular

leaves, resembling grass leaves; hence the name *grasstrees*, by which the species are known in Australia. The leaves are used as fodder for cattle, and the somewhat sheathing base of the inner leaves and the buds are eatable and form, particularly when roasted, an agreeable article of food. From the centre of the leaf tuft there rises a long cylindrical scape, which terminates with a long spike of small white flowers situated in the axils of the imbricate bracts and producing triangular three-celled capsules, containing flattish, hard, black seeds.

R. Brown (1810) described seven species, viz.: X. arborea, australis, hastilis, media, minor, bracteata and pumilio. The two first-named species are arborescent, while the third and fourth have short stems, that of X. hastilis being about four feet high, and is said to sometimes attain a diameter of one foot and then to be probably more than a century old, owing to its slow growth. The last three species named before are stemless, *i. e.*, the stems remain buried in the soil or rise scarcely above ground.

All the species abound in a resinous juice which, on exposure, hardens and as obtained from the different species, undoubtedly differs in appearance and also in composition. Guibourt distinguishes three xanthorrhœa resins—one yellow, one brown and one red. The dark-colored resin is still ascribed by some authors to X. hastilis, but Drummond (1840) pointed out that an arborescent species, probably X. arborea, is in Australia called *black boy*, and the Pharmaceutical Society of Victoria state that X. australis (which is arborescent) yields a large quantity of a brilliant ruby-colored resin. On the other hand, the botanist Smith refers the yellow resin to X. hastilis and some other species. The last named is the X. resinosa of Persoon, and of it *Acaroides resinifera* is quoted as a synonym in Gray's Supplement. The name acaroid resin is thus explained. The different xanthorrhœa resins have been described more especially in regard to their uses in papers by Mr. Redford as a polishing material in "Amer. Jour. Phar.," 1863, p. 453, 454, and by Mr. P. L. Simmonds, in the same journal, 1857, p. 226 to 228, and in 1866, p. 465 to 468; the papers last quoted refer chiefly to the use of the resin in the manufacture of illuminating gas. The resins seem to be obtained as natural exudations, the subterraneous portions of the plant producing them in some species, at least, apparently in great abundance; but resin is also found covering the base of the leaves and it is secreted in such quantity in the woody stems that after crushing the latter it may be sifted

from the chips to the extent of a hundred-weight per diem by one laborer.

The *acaroid resin* which was first noticed in 1789 by Governor Phillips (Voyage to Botany Bay) is met with in tears and in large masses usually, on account of its brittleness, broken into irregular pieces. It is intermixed with portions of wood, stalks, earth, etc., and when fractured has a speckled or granitic character. The *pure* resin is reddish yellow; the commercial article is externally brownish yellow, and internally opaque and of a pure yellow color, resembling that of gamboge, but always much lighter. This color description by Guibourt agrees with the sample presented here; but since the resin is described by some authors as being of a deeper yellow than gamboge, it is evident that it must be sometimes collected from different species. Triturated with water, it does not form an emulsion. When fresh it has an odor analogous to that of poplar buds, but much more agreeable (Guibourt); to us the odor appears to approach very nearly that of benzoin mixed with a little storax. By age the odor becomes weaker and gradually disappears, but it is always developed on powdering or by fusion. The resin dissolves in alcohol, leaving only 0·07 of a gum insoluble in water and analogous to bassorin. When heated it gives off white vapors, condensing into brilliant small laminæ, which Laugier regarded as benzoic acid, but which Stenhouse (1848) found to consist largely of cinnamic acid.

The *brown resin* has a more balsamic odor than the preceding; the tears are roundish, externally deep red-brown and resembling dragon's blood; but the fracture is shining, glass-like, and in thin splinters it is perfectly transparent and of a hyacinth-red color. It is completely soluble in alcohol and contains more volatile oil, rendering it viscous and somewhat adhesive.

The *red resin* is in distinct tears of a deep brown-red and sometimes externally bright red; its fracture is glass-like; thin splinters are transparent and ruby-red; it is completely soluble in alcohol, the ligneous intermixtures excepted, and its balsamic odor becomes always apparent on heating.

Regarding the composition of the Xanthorrhœa resins, Pereira quotes the analyses of Lichtenstein (1799), Schrader, Laugier, Widman (1825), Trommsdorff (1826) and Stenhouse (1848). Heated with manganic binoxide and sulphuric acid acaroid resin evolves the odor of oil of bitter almonds, and by the action of nitric acid it yields a

large proportion of carbazotic (picric) acid with little nitrobenzoic and oxalic acid (Stenhouse). Trommsdorff found the volatile oil to be colorless, fragrant and of a pungent aromatic taste. The resin is soluble in solutions of the alkalies and alkaline earths. On dry distillation much carbolic acid is obtained, with a small quantity of a light oil, but according to Sommer no umbelliferon. In 1866, Hlasiwetz and Barth ascertained that acaroid resin on being treated with fusing potassa yields large quantities of paraoxybenzoic acid, and from the mother-liquor of the etherial solution a little resorcin and pyrocatechin was obtained, together with the double compound of protocatechuic and paraoxybenzoic acids = $C_{14}H_{12}O_7.2H_2O$, which had been previously obtained from benzoin.

Three different xanthorrhœa resins were found by Hirschsohn (1877) to be incompletely soluble in chloroform and ether, but to dissolve completely in alcohol, the solutions acquiring a brown-black color with ferric chloride. The solution of the acaroid resin is yellow and yields with lead acetate a precipitate, while the solutions of the other two resins are red, that of X. quadrangulare being not disturbed by acetate of lead, while that of X. arborea produces with the same reagent a turbidity; the chloroformic solution of the latter is yellow, that of the former colorless.

The xanthorrhœa resins have been repeatedly suggested as possessing some value in perfumery; but they appear to be inferior for this purpose to benzoin, storax and the balsams of Peru and Tolu. Their medicinal properties appear to be likewise not well marked. As early as 1795 acaroid resin was said by Kite to neither vomit, purge nor bind the belly, nor to act materially as a diuretic or diaphoretic. Dr. Fish ("Boston Journal," x, p. 94) employed it in the form of tincture with opium in fluxus hepaticus and the colliquative diarrhœa of phthisis, and it has been recommended in chronic catarrhs. A *tincture of acaroid resin*, which has been given in doses of f℥i to ii mixed with milk or a mucilaginous liquid, has been recommended to be made of equal weights of the resin and alcohol, and according to another formula of resin ℥ii to alcohol Oi. If used at all, the latter formula would appear to furnish a preparation of proper strength.

ON RESORCIN.

By Frederick B. Power, Ph.D.

Read at the Phamaceutical Meeting, April 19.

This organic body, which, until a comparatively recent date, has possessed chiefly strictly scientific interest, more particularly as a benzol derivative, by its association with the development of the brilliant theories regarding the constitution of the large class of so-called aromatic compounds, seems now to have received considerable attention from a practical standpoint, and to have attracted notice by its asserted valuable properties as a disinfectant, antiseptic and caustic, and, to a certain extent also as a styptic and emulsifying agent.

Although the number of valuable modern disinfectants and antiseptics which have already received recognition and practical application in their respective spheres is by no means small, several of them belonging also to the benzol group, as phenol, thymol, benzoic and salicylic acids, the newly introduced agent, resorcin, from the fact of being odorless, and admitting also of a considerable range of application, would seem justly entitled to an opportunity of substantiating its claims on the broad field of experiment.

With the consideration of its recent introduction and application in medicine and surgery, and, from the fact of not having heretofore received any special pharmaceutical notice in this country, it was thought of interest to present at this time a brief résumé of its history, methods of formation, chemical characters and applications, without attempting, however, to include even the citation of all the references relating to the voluminous literature, which is principally distributed through the German scientific journals.

Resorcin, $C_6H_6O_2$, was first obtained in 1864 by Hlasiwetz and Barth[1] from galbanum resin, in amounts of about 6 per cent., by fuion with caustic potassa. The galbanum resin, previously freed from gum by means of alcohol, is fused with from $2\frac{1}{2}$ to 3 times its weight of caustic potassa until a homogenous mass is obtained, which is then supersaturated with dilute sulphuric acid, filtered, and the filtrate shaken with ether. The etherial solution leaves upon evaporation, or after distilling off the ether, a residue, which, upon distillation yields

[1] "Wien. Acad. Ber.," xlix (2), p. 203; "Ann. Chem. Pharm.," cxxx, p. 354; "Zeitschrift Chem. Pharm.," 1864, p. 208; "Bull. Soc. Chim. [2], iii, 205; "Ann. Ch. Phys." [4], iv, p. 496.

at first a watery distillate with the odor of butyric acid, and afterwards an oily quickly crystallizing body. The latter, which consists of impure resorcin, is repeatedly distilled in order to remove the volatile fatty acids, or, after saturation with caustic baryta, it is again dissolved in ether and purified by recrystallizaiion. It was afterwards obtained by a similar process from ammoniacum, asafœtida, sagapenum, acaroid, and other resins, and would seem to be produced by all resins which by destructive distillation furnish umbelliferon, $C_9H_6O_3$, the latter also yielding it by fusion with caustic potassa. It is likewise readily obtained by the destructive distillation of brasilin or dry extract of brazil wood.

Since the more exact determination of its chemical characters and constitution these methods of formation have, however, been superceded by its direct production from other closely related benzol derivatives, such as meta-chlor- or meta-brom-benzolsulphonic acid, meta-chlor- and meta-iodophenol, and phenolmeta-sulphonic acid, or their potassium salts, by fusion with caustic potassa, the latter acid being decomposed as follows:

$$C_6H_4\begin{cases}OH\\SO_3K\end{cases} + KOH = C_6H_4(OH)_2 + K_2SO_3.$$

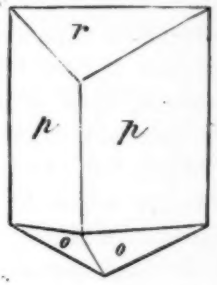
The most reasonable and best method for its formation, however, and that which is now technically employed, is from the benzoldisulphonic acid (formed by the action of fuming sulphuric acid on benzol), subsequently preparing therefrom the potassium salt, and fusing this with caustic potassa, when it is resolved into resorcin and potassium sulphite, as follows:

$$C_6H_4\begin{matrix}SO_2—OK\\SO_2—OK\end{matrix} + 2KOH = C_6H_4\begin{matrix}OH\\OH\end{matrix} + 2K_2SO_3.$$

Resorcin, $C_6H_6O_2$, or $C_6H_4(OH)_2$, is a diatomic phenol, isomeric with hydroquinone and pyrocatechin, the distinction in its physical and chemical characters from the two latter being due simply to the different relative position of the hydroxyl groups in the benzol nucleus. Its name is derived from *resina*, resin, and orcin, $C_6H_3CH_3(OH)_2$, a handsomely crystallizable, homologous body, which appears to exist ready formed in many lichens, and was first isolated therefrom by Robiquet in 1829.

Resorcin is odorless and colorless when perfectly pure, but by exposure to the air assumes a reddish color. It crystallizes in short thick prisms of the rhombic system, as represented by the subjoined figure,

which, together with its explanation is abstracted from the observations of Prof. Groth, in his "Physikalische Krystallographie," p. 426. Relation of axes $a : b : c = 0{\cdot}9105 : 1 : 0{\cdot}5404$, $p = \infty P$, upper pole: $r = \overline{P}\infty$, lower pole : $o = P$. Plane of optical axis $o P$, a first middle line, double refraction —; for the *Na* line $2V = 46°14'$, $\beta = 1{\cdot}555$.



$2E = 76°40'$ red
$76°06'$ yellow
$74°35'$ blue.

It melts at 104°C., and boils at 271°C., but becomes partially volatilized at a much lower temperature; it is very readily soluble in water, alcohol and ether, but is insoluble in chloroform and carbon bisulphide. Its aqueous solution is neutral in its action on litmus, possesses an intensely and disagreeably sweet taste, and assumes a dark violet color on the addition of ferric chloride, which disappears on the subsequent addition of ammonia; chlorinated lime also produces a transient violet coloration. Its solution with ammonia by exposure to the air becomes rose-red, then brown, by evaporation with a gentle heat green, finally bark blue, and, on the addition of an acid, again dark red. Resorcin reduces nitrate of silver and an alkaline copper solution on boiling; upon the addition of bromine water to its aqueous solution, small colorless needles of tribromresorcin, $C_6HBr_3(OH)_2$, are separated, which are sparingly soluble in cold water, more readily in hot water and in alcohol. With the acid chlorides, acetyl, benzoyl and succinyl chlorides, resorcin combines to form ether-like compounds, in which the hydrogen atoms of the hydroxyl are replaced by acetyl, benzoyl, or succinyl groups, as $C_6H_4(O—C_2H_3O)_2$, etc.

Resorcin is also of considerable interest from the fact of its entering into the composition of several beautiful coloring matters, which, although yet in their infancy, promise to be of great future importance. When heated with phtalic anhydride at 195°C., as shown by Baeyer, the phtalein of resorcin or *fluoresceïn* is produced as follows: $C_8H_4O_3 + 2C_6H_6O_2 = C_{20}H_{12}O_5 + 2H_2O$. From the solution of the melted mass in alcohol it is precipitated in white flakes by water, and crystallizes from alcohol in small, dark-brown, crystalline crusts, which dissolve in ammonia, forming a red solution, and displaying an intense green fluorescence. From the fluoresceïn by the action of

bromine, tetrabrom-fluorescein is produced, the potassium salt of which, *eosin*, $C_{20}H_6K_2Br_4O_5$, is remarkable for the magnificent rose-red color of its aqueous solution, accompanied by a green, or, when the solution is very dilute, yellow fluorescence. The azo-compounds of resorcin, most of which are also fine coloring matters, have quite recently been studied by P. Weselsky ("Ber. d. deutsch chem. Ges.," 1881, p. 50), the diazo-resorcin being formed by the action of pure nitrogen tetroxide on resorcin in etherial solution, as shown by the equation $3C_6H_6O_2+N_2O_4=C_{18}H_{10}N_2O_6+4H_2O$.

It forms brown, granular crystals with a green metallic lustre, which are dissolved by alkalies with a magnificent blue violet color. Finally may be mentioned the so-called *resorcin-black* (see this journal, 1876, p. 379), which is produced by the addition of a solution of cupric sulphate and ammonia to an aqueous solution of resorcin.

In regard to the economic and therapeutic applications of resorcin, the following abstracts quoted from Dr. Justus Andeer, as contained in the "Scientific American," No. 9, 1881, p. 129, and in most of the recent medical journals, will be found of interest. Chemically pure resorcin, which withstands the light, when in a one per cent. solution stops the development of fungi and mould. This has been proven not only by artificial experiments in the laboratory, but also chemically on the appearance of symptoms of disease. A one per cent. solution will not prevent fermentation, but only retard it in favorable cases. To stop it completely requires a comparatively strong solution of 1½ to 2 per cent. What seems deserving of special remark is that absolutely pure resorcin, in any degree of concentration, coagulates albumen and precipitates it from solution. On this account the author considers it an excellent caustic to remove unhealthy tissue. In crystals it cauterizes as powerfully as lunar caustic, but, as stated, without pain, nor does it form metallic albuminates, which are insoluble or difficult of solution, causing a scar; in a comparatively short time, 3 or 4 days, the skin regains its natural appearance.

As a caustic it is valuable in catarrhal, tuberculate and syphilitic sores, in which cases it is best used in the form of crystals applied to the excrescences, particularly on mucous membranes, removing them painlessly, and restoring the membrane in 3 or 4 days to its normal condition. In the form of powder it is said to be an efficient remedy in diphtheritic affections. It is an excellent remedy by way of inhalation in the form of spray, neither irritating the eyes of the operator

nor the patient, and is almost odorless. For exhibition in the fluid form the best vehicles are alcohol, glycerin and syrup of orange, but it is preferably administered in powder inclosed in wafers or gelatin capsules, whereby its peculiar taste is completely masked.

It is stated that the following formulæ can be recommended:

℞ Resorcini puri, ... gr. viii
Aquæ destillat., ... ℥iii
Syrupi aurantii, ... ℥i
M. S. A tablespoonful every two hours.

For an emulsion:

℞ Resorcini puri, ... gr. viii
Amygdalæ dulcis, . . . ℥v
Syrupi aurantii, ... ℥i
M. ft. emulsio.[1] Sig. A tablespoonful every two hours.

The spray should be made thus:

℞ Resorcini puri, ... grs. xviii
Aquæ destillat., ... ℥viii. M.

DILATOMETER.

By Gustavus Pile.

Read at the Pharmaceutical Meeting, April 19.

The following is a description of a dilatometer of a new pattern, and intended mainly to show the amount of the dilatation or contraction of a liquid as the temperature is either increased or diminished. It is in construction similar to a hydrometer, having, however, a very large bulb and a long stem, the whole instrument being some twenty inches in length. The graduation on the stem is so made that each degree represents the $\frac{1}{1000}$ part of the whole volume up to the point marked 1,000, which is placed at the middle of the stem. The scale has a range of 60 degs., 30 above and 30 below the central mark; each of these is sub-divided into quarters. In using the dilatometer it is to be floated in the liquid to be examined, and enough shot added to bring it to the 1,000 mark, the temperature at the same time being brought to 60°F. If now the temperature be increased the instrument will sink as the volume of the liquid increases, and by observing the number of volumes occupied at regular intervals of increase of temperature a table of expansion can readily be made; so also, by decreasing the

[1] It would seem that in this formula aquæ f℥iii has been omitted, for preparing the emulsion and making the dose of resorcin = gr. i.

temperature below 60° the table can be extended to any desired point. In order to determine the specific gravity of the liquid at the points noted we have merely to divide its specific gravity at 60° by the number of volumes occupied at the observed temperatures, as shown by the table, and multiply the quotient by 1,000.

In experimenting with glycerin the dilatation was observed to be $2\frac{1}{2}$ volumes for every 10 degrees of temperature, this expansion being uniform as high as 100°, the limit of the examination. The contraction on cooling down to 40° was likewise in the same ratio, as will be seen in the following table:

Temperature.	Volume.	Spec. Grav.	Spec. Grav. of 30°B.
40°	995	1·260	1·267
50°	997·5	1·257	1·264
60°	1000	1·254	1·260
70°	1002·5	1·250	1·257
80°	1005	1·247	1·254
90°	1007·5	1·244	1·251
100°	1010	1·241	1·248

The specific gravity of the sample used was found to be at 60°, 1·254 or $29\frac{3}{8}$°B., and annexed is given the specific gravities of glycerin of 30°B., which is the strength of the article of commerce, or at least is so represented to be. By referring to such a table we would be able to use the hydrometer at any temperature without the trouble of reducing at the time of every trial, which is of considerable difficulty during the summer months. Tables so prepared, representing various chemical products would, no doubt, prove of considerable value to the pharmacist and also to the manufacturing chemist.

A PLEA FOR MINIM MEASURING.

By Thos. C. Craig, M.D.

Much has been written in regard to the size and the number of drops of different liquids in a definite measure.

Almost all observers are at variance with each other in regard to the ultimate results obtained—some claiming a certain number of drops equal to a fluidrachm, others differing and declaring that it takes a greater or less number, as the case may be, of drops to make a fluidrachm, while each observer has used analogous liquids.

We are told that the number of drops to the fluidrachm will vary in bottles with lips of different lengths, that the width of the bottle

mouth will materially alter the size of the drops; the holding of the bottle in different positions will also change the volume of the drops. Many other modifying influences are mentioned, until the question comes home to us, How shall we bring order out of this chaotic problem?

If we turn to our chemical physics we find that *the cohesive force of liquids is modified under different conditions.*

The converse of this is also true. All liquids tend to form spheres. This will be seen in the dew drops, globules of mercury, etc.

In liquids there are two forces at play, viz., the cohesive force and the force of gravity. Both of these are modified by the density of the liquid and the conditions present. The attraction of cohesion strives to arrange the molecules in an orderly manner, while the gravitative force strives to draw the mass towards its centre.

Looking, then, at the problem from this light, it seems reasonable to conclude that much of the diversity of observation in the size of different drops has arisen because the same conditions are not always present.

It would be almost impossible to have the same conditions of *volume, temperature, friction* and *density* present in like preparations made by different persons, and hence would arise a variance in observation in the size of a drop when attempted.

The size of a drop will depend materially on the amount of liquid in the bottle, the distance it has to traverse before leaving the lip of the bottle, the temperature of the liquid and also its density.

When a drop begins to form, the different molecules will commence to collect around a common centre, and arrange themselves in a definite order, and they will continue to collect around this centre just so long as the friction of the drop, plus the cohesive force, can overcome the gravitative force. But just as soon as the gravitative force is greater than the frictional force, plus the cohesive force, the drop will separate.

Now, all this difference of observation has arisen from the fact that the volume of liquid and the frictional force have not been taken into consideration in the different experiments.

It would be impossible to know whether the same conditions were always present to different observers, and there will always be a dissimilarity in results, and it is for this reason that I should like to see the minim become the unit for *all* small measures.

In the minim we have very little variance, the condition of temperature being almost the only cause for variations in volume, and this will be so small as to make no practical difference.

If the minim was the universal unit of small measure, we should then know that in prescribing *one minim* we would be giving *exactly one-sixtieth part of a fluidrachm.*

For example, in giving one minim of tincture of digitalis we know that we are giving *exactly one-sixtieth part of a fluidrachm of tincture of digitalis* rather than that we are giving *perhaps* one one-hundred and twentieth part of a fluidrachm when we prescribe one drop of the same tincture. If the minim was always recognized, chloroform, ether and many other volatile liquids could then be given with much more *quantitative exactness* than under the old way, and thus many mistakes would perhaps be obviated, many explanations saved, and perhaps many patients benefitted.

Let the minim, then, be used, regulating our doses accordingly, and thus guarding against any misunderstanding in the meaning of our prescriptions.

Blockley Hospital,
Philadelphia, Pa., April 11th, 1881.

AQUA AMYGDALÆ AMARÆ, U. S. P.

By G. A. Zwick.

Referring to the just criticism of Stillé and Maisch, in the National Dispensatory, on this preparation as made from the oil of bitter almonds, the undersigned places before the readers of the Journal some experiments made and results arrived at with this water made from bitter almonds and also from peach kernels, *i. e.*, peach seeds.

First Experiment.—2 lbs. bitter almonds were powdered, the fixed oil expressed (yield 8 fluidounces oil), the press cake was powdered, macerated for 12 hours, and then treated according to formula, page 209 (page 212 of second edition) National Dispensatory, by placing it in a copper still with so-called "excelsior packing" for a bed, on which the magma was laid, in a cloth; twenty fluidounces were distilled over and examined for hydrocyanic acid by the silver test; $\frac{6}{10}$ of 1 per mille was found, being $\frac{4}{10}$ short of the required amount; upon further search it was found the bitter almonds had sweet almonds mixed among them.

Second Experiment.—12 lbs. peach kernels were broken up coarsely in a mill and then finely powdered, the oil expressed (yield, 3 lbs. by weight), the press cake powdered, divided into three portions and treated as above, but the distillate was separated as received in portions of 10 fluidounces each, and numbered I to VI. Nos. I, III and VI were examined for hydrocyanic acid, and found to contain, respectively, 2, $\frac{3}{5}$ and $\frac{1}{5}$ per mille of hydrocyanic acid.

Upon further examination, and estimating after mixing Nos. I, II, III and IV, a water was obtained of the required strength, *i. e.*, containing 1 per mille of hydrocyanic acid. Nos. V and VI had to be rejected, being too weak. There was no observable difference in the odor or appearance between the peach seed water and that of the bitter almonds, and the yield was larger; the fatty oil, after being filtered, had all the qualities of fresh oil of sweet almonds, and was bland, clear and bright.

Summary.—The well-known therapeutic advantages of hydrocyanic acid admitted, its waning employment can only be attributed to the unreliability in quality; bitter almond or peach seed water preserves its strength, if properly kept, for a year at least, and can be dispensed in an invariable, measurable quantity, the relative dose being $\frac{1}{2}$ to 1 fluidrachm. Hydrocyanic acid cannot be given without a vehicle, therefore every point is in favor of bitter almond water or, which is in fact the same, that of peach seeds.

The distillation was done in a Beindorff apparatus, made by Wolff & Sons, of Heilbronn, with a single French disc burner, No. 2, and when the operation was under way the gas had to be turned off one-third. The apparatus is on the first floor, the cooler in the cellar.

Covington, Ky., April 16th, 1881.

THE DOSE OF EXTRACTUM PHYSOSTIGMATIS.

By Phil. Hoglan.

On April 11, the following prescription was handed me to dispense:

℞ Extract. belladonnæ,
" nuc. vomicæ,
" physostigmatis, . *aa* gr.vi
Make into 12 pills. Dose, one at bed hour.

As each pill would contain one-half grain of extract. physostigmatis, I hesitated in filling it, as the U. S. Dispensatory, 14th edition, p. 1189, gives the dose of this extract from one-sixteenth to one-sixth

of a grain, and nowhere in the Dispensatory is the dose mentioned above one-fourth of a grain (U. S. D., p. 702). On calling the prescribing physician's attention to the matter, he referred me to "Bartholow's Treatise on Materia Medica and Therapeutics," p. 423 (third edition, revised), where the author gives the dose one-sixth to one-half grain, and even so high as five grains; also to page 425, where the following prescriptions are recommended:

(1) ℞ Extracti physostigmatis,
" belladonnæ.
" nucis vomicæ, . *aa* gr. v
M. ft. pil. no. x. Sig. One pill at bed hour.

(2) ℞ Extracti physostigmatis,
Resinæ podophylli, . . . *aa* g.. iii
M. ft. pil. no. vi. Sig. One pill at bed hour.

In each of the above prescriptions the dose of the extractum physostigmatis would be one-half grain, which dose would have been given had I dispensed the prescription handed me without consulting the physician.

Now, I wish to ask the editor and readers of the "Journal" two or three questions:

1. Did I do right in refusing to fill the prescription before consulting the physician?

2. The prescription being for an adult, would it have been a *dangerous* dose of extractum physostigmatis?

3. Is not the dose (5 grains) given by Bartholow an *extremely dangerous* one?

These questions are of great importance to both physician and pharmacist, as the latter might, on some occasions, delay filling a prescription giving such enormous doses of such an active remedy as physostigma, and thus call down the maledictions of the prescriber who takes Bartholow as his guide. There is certainly too much discrepancy in the doses given in Bartholow's Treatise and the U. S. Dispensatory, and I for one will rely on the latter as my authority for not filling the prescription referred to. I hope this matter will receive the attention of the readers of the "Journal," and that satisfactory answers to the above questions will be given.

Newcomerstown, O., April 12, 1881.

REMARKS BY THE EDITOR.—The care shown by the author of the above paper is quite commendable, and if we understand him correctly

that he did not refuse to put up the prescription, after the physician had assumed the responsibility incurred by the dose, we think that he was not at fault. The German Pharmacopœia, which in its table of maximum doses always remains on the safe side, permits the dispensing of 0·02 gm. = $\frac{3}{10}$ gr. pro dose, and of 0·06 gm. = $\frac{2}{10}$ gr. within a day; but larger doses, if found necessary by the attending physician, are not prohibited.

Professor Stillé, in the National Dispensatory, gives the *average dose* of the extract of Calabar bean as one-tenth of a grain; but under "Physostigma," speaking of its use in tetanus, he says: "The *minimum* dose of extract of physostigma which should first be administered is one-third of a grain. It should be *repeated every quarter of an hour* until its specific action is developed and the spasms are completely overcome. This effect should be steadily maintained and then *reproduced* as often as the spasms occur. It is usually necessary to *increase* the dose in order to maintain its original impression."

Dr. Harley, in Royle's Materia Medica, reports that "Dr. O'Leary took 140 grains of the extract in 86 hours, and for a short time four grains every hour during an attrek of traumatic tetanus, and Dr. Eben. Watson has given even *larger doses* to patients suffering from the same affection." Dr. Harley is inclined to attribute these large doses in a measure to the variability of the extract; but he mentions the ordinary dose to be from $\frac{1}{16}$ to $\frac{1}{4}$ grain.

Dr. Farquharson (Guide to therapeutics and materia medica, Amer. edit. by F. Woodbury, M.D., p. 344) says: "It is seldom used internally, for in tetanus the functions of the stomach are suspended in great measure, and drugs are probably only very partially absorbed; *subcutaneous injection* is therefore our best method, and we use a solution of the extract (from $\frac{1}{6}$ to $\frac{1}{3}$ grain), neutralizing its irritating acidity by the addition of a little soda."

There are but few deaths on record produced by Calabar bean, although the cases of intoxication are rather numerous. A. S. Taylor (On Poisons) reports from fifty to sixty children poisoned at Liverpool from eating the seeds from a heap of rubbish, where they had been thrown with the sweepings of a ship from the west coast of Africa; only one of the children, aged six years, who had eaten six seeds, died.

It is evident from the above quotations that physostigma is a very active and even dangerous medicine; that it should be used with great caution; but that in certain morbid conditions it is borne in relatively

large doses with beneficial effect. Of these conditions the physician is the proper person to judge, and we would not hesitate to dispense the large dose of five grains of the extract, as given by Prof. Bartholow; but we should make it a point to ascertain that the attending physician really intended to give such a quantity and was aware that it was an unusual dose, larger than the *average*.

DIALYZED MANNITE.

By Louis Genois, Ph.G.

Extract from an Inaugural Essay.

From its ready solubility in aqueous liquids and the large proportion in which it exists in the different mannas of commerce, mannite is well adapted for preparation by dialysis. The accompanying specimen was obtained in the following manner:

Five troyounces of well selected brittle pieces of manna were dissolved in twenty fluidounces of distilled water by the aid of heat; the solution was allowed to cool, filtered, heated again to 170° F. and poured into a parchment paper covered glass dialyzer, immersed in 12 fluidounces of distilled water heated to the same temperature and set aside. In 24 hours the dialyzate was removed and replaced by twelve fluidounces of water at 170°F. and again set aside; this was repeated a second time, the contents of the dialyzer being also heated each time to the same temperature. The resulting solutions were mixed, concentrated at a gentle heat, filtered and evaporated to a syrupy consistence, and while still hot poured into three equal volumes of cold 85 per cent. alcohol and allowed to rest for 24 hours. At the end of that time a considerable amount of crystals, slightly colored, had deposited; these were redissolved in warm water, the solution filtered through animal charcoal, reduced to a syrupy consistence, poured into cold alcohol, as before, and the mixture allowed to rest. The crystals now formed were purified by solution in hot alcohol, filtration and evaporation.

The amount of crystals obtained from the various kinds of manna was:

Large flake, best quality, . . .	65 per cent.
Small " fair " . . .	26
Sorts, " " . . .	17

In the case of the last named the mixture became so viscid that dialysis was very much impeded and at one time almost entirely

stopped, whereupon it was shaken with some coarsely ground litharge and filtered, after which dialysis proceeded satisfactorily.

An attempt was made to obtain mannite by this process from infusions of the roots of Taraxacum deus leonis and Leptandra virginica and of the bark of Canella alba, in which it is said to exist, but without success. From the canella, however, about 0·25 per cent. of small, colorless, acicular crystals was obtained, the character of which was not further examined.

Mannite is soluble in four parts of cold water, three parts of acetic acid, and insoluble in ether, chloroform and petroleum benzin. When it is moistened with concentrated sulphuric acid and some acid chromate of potassium afterward added, a yellowish-green color is produced, which changes soon to a dirty, greenish brown. Dialyzed mannite in contact with air assumes a yellowish color, which deepens by age. When perfectly pure it should not precipitate an alkaline solution of cupric sulphate on the application of heat.

CHEMICAL NOTES.

By Prof. Samuel P. Sadtler, Ph.D.

Inorganic Chemistry.—*Spontaneous Combustion Engendered by Nitric Acid.*—In the last number of this journal (April, 1881, p. 170) some experiments on the development of a spontaneous combustion in boxes in which strong nitric acid had been spilled upon hay, straw and similar organic materials were narrated. In this narration the statement was made that nitric acid of 1·45 gravity would not give rise to a combustion. R. Haas has since described some experiments bearing upon the same subject. He finds that when the hay or straw is packed thoroughly so that no great air spaces are left between, and when the acid is added at several times as the material is packed in layers, acid of 1·39, or ordinary commercial nitric acid, can give rise to spontaneous inflaming. The only essential conditions seem to be a compact packing so that the heat of the reaction is not dissipated, and a thorough saturation of the material with the acid. In cases of accidents from breaking of nitric acid flasks in transport these conditions are often present, and hence the resulting fires.—*Ber. der Chem. Ges.*, xiv. p. 597.

Preparation of Ferricyanide of Potassium.—K. Seuberlich has tested the conditions under which ferrocyanide of potassium is changed by the action of lead peroxide in alkaline solution into the ferricyanide of

potassium. His results agree with those previously obtained by Lunge, who found that a complete change was only reached when the liberated alkali was neutralized by an acid. The change succeeds perfectly in the cold when the solution of ferrocyanide is treated with lead peroxide, and then a slight excess of dilute hydrochloric acid added with constant stirring. When red lead is used higher temperatures and larger excess of acid are necessary.

The change to ferricyanide can also be effected by the aid of manganese dioxide, even in the cold if to 1 molecule of ferrocyanide of potassium 1 of the manganese dioxide is used. In both cases there is obtained from the filtrate, after neutralizing with soda, a very pure salt, although in the second case the liquid is difficult to filter. The author believes that by the addition of carbonates and by the blowing in of a current of air, the manganese sesquioxide precipitate can be oxidized so that it will give no trouble in washing. Upon adding a base, this manganese precipitate is readily converted into dioxide again. Either of the above-mentioned methods seems adapted to replace the old chlorine method.—*Dingler's Polytech. Jour.*, 238, p. 484.

Composition of Common Hyposulphite of Sodium.—A. Bernthsen has made some careful experiments with a view of determining exactly the formula of the so-called hyposulphite (*hydrosulphite*) of sodium. Taking the crude solution resulting from the action of zinc upon acid sulphite of sodium, and adding chloride of barium (baryta water was first tried, but vitiated results because of the formation of hydrogen sulphide) to remove the sulphurous and sulphuric acids, a solution was gotten in which only the chloride and hyposulphite of sodium, barium and zinc remained. The hyposulphite in dilute solution was now treated with iodine, which changed it into sulphate, and the amount of this was determined by the aid of barium chloride. It was found in this way that 1 atom of sulphur as hyposulphite required 3 atoms of iodine to convert it into sulphuric acid. The anhydride of the hyposulphurous acid would therefore have the formula S_2O_3.

The same result was gotten in still another way. The amount of ammoniacal copper sulphate solution needed to change the hyposulphite into sulphite showed that for every 2 atoms of sulphur in the hyposulphite 2 molecules of copper sulphate (that is 1 atom of oxygen) were needed for the reaction $S_2O_3+O=2SO_2$.

The simplest formula for the sodium salt based upon this anhydride is SO_2Na. Bernthsen is inclined to think, however, that the double of

this, $S_2O_4Na_2$, is the correct formula, and the reaction for its production would be, $Zn+4NaHSO_3=ZnSO_3+Na_2SO_3+Na_2S_2O_4+2H_2O$. —*Ber. der Chem. Ges.*, xiv, p. 438.

ORGANIC CHEMISTRY.—*On the Analysis of Carbon Disulphide and of Liquids Containing it.*—H. Macagno has sought to make the well-known reaction between carbon disulphide and alcoholic potash solution available for the determination of the former. In this case potassium xanthate is formed according to the reaction

$$C_2H_5OH+KOH+CS_2=KC_2H_5COS_2+H_2O.$$

This alcoholic solution, saturated with acetic acid and treated with a drop of cupric sulphate, gives a brownish precipitate of cupric xanthate, which quickly changes to bright yellow flocks of cuprous xanthate. This salt is insoluble in water and in dilute acids.

The attempt was first made to determine gravimetrically the amount of copper so obtained, but this was found to be an uncertain method. The author succeeded better with a volumetric process of determining the xanthic acid formed by using a standard solution of cupric sulphate to precipitate it. The end of the reaction is shown by testing with a drop of potassium ferrocyanide on the end of a glass rod. If this be put on a clean porcelain plate with a drop of alcoholic solution of potassium xanthate a perfectly white compound is formed; but if xanthic acid has been precipitated as cuprous xanthate, and any excess of cupric sulphate is present, the ferrocyanide drop becomes red-brown because of the formation of copper ferrocyanide.

Benjamin Nickels, in the next number of the "Chem. News," adapts this same reaction to the purification of commercial benzin (benzol), as follows: "I usually take about 200 cc. of the sample under examination, and if of 90 per cent. quality add to it 20 cc. (10 per cent.) of a saturated hot solution of potassium hydrate in absolute alcohol, methylated or otherwise. The mixture is then subjected to frequent agitation during a space of two hours. The potash compound of carbon disulphide rapidly forms, and subsides in feathery groups with a silky and glistening appearance. At the expiration of the time named I filter off the benzol so treated and subject it to two washings with its own bulk of water in a suitable separator; this operation completely removes the alcohol from the benzol. Finally, I run off the wash-water, remove the benzol, and shake it up with a little powdered gypsum (plaster of Paris), by which means the suspended and dis-

solved water is instantly removed, and the benzol left clear and anhydrous."—*Chem. News.*, vol. 43, pp. 138 and 148.

On a Simple Means of Preparing Pyrogallic Acid for Photographic and other Uses.—Pyrogallol, or pyrogallic acid, is made, as the latter name implies, by heating gallic acid; but the process, as usually conducted, is very uneconomical on account of the difficulty of preventing the decomposition of the pyrogallol into metagallic acid. According to the equation $C_7H_6O_5=C_6H_6O_3+CO_2$ gallic acid should yield 80 per cent. of its weight of pyrogallol, but the amount usually obtained is very much less than this; on the average, not more than 30 per cent. is formed. The greatest yield is given at a temperature of from 185° to 200°C. If the heat be allowed to rise to 250°C. the gallic acid is converted into metagallic acid, carbon dioxide and water, thus: $C_7H_6O_5=C_6H_4O_2+CO_2+H_2O$.

The difficulties attending the conversion of gallic acid into pyrogallol have their natural effect on the price of the latter article. Photographers will be interested, therefore, in knowing how they may be able to prepare their own pyrogallol from gallic acid by a very simple and sufficiently expeditious process. Prof. T. E. Thorpe has discovered that if 10 grams (say 150 grains) of dry gallic acid and 30 cc. (say 1 fluidounce) of pure glycerin are placed in a 2-ounce flask, or wide test-tube, and heated on a sand bath to a temperature of from 190° to 200°C., so long as bubbles of carbon dioxide are seen to be formed the gallic acid readily dissolves, and in a very short time is converted into the theoretical quantity of pyrogallol.

For photographic uses the brown viscous liquid, after cooling, is diluted with 1000 cc. (say 34 ozs.) of water. A solution is thus obtained each half ounce of which contains rather more than 1½ grain of pyrogallol, sufficient for developing a quarter-plate, according to Mr. Swan's instructions. As the price of pyrogallol is at present about seven times that of gallic acid, the new process is one that commends itself.—*Ibid.*, vol. 43, p. 109.

Lepidin, or Methyl-Chinolin.—Hoogewerff and van Dorp have made a study of lepidin, which is found in considerable quantity in that portion of the product of the action of caustic potash upon cinchonin, which boils at 250° to 270°C. It was obtained in a pure state by precipitating the solution of the acid sulphate with alcohol, recrystallizing the sulphate and decomposing it with potash. Lepidin, prepared in this way, boils at 256° to 258°C. Its acid sulphate, $(C_{10}H_9N)_2H_2SO_4$,

crystallizes in needles; the dichromate from hot water in golden-yellow needles, which become brown when exposed to light, and decompose at 100° to 110°. Lepidin platino-chloride, $(C_{10}H_9N.HCl)_2PtCl_4+2H_2O$, forms orange-red needles. With silver nitrate lepidin yields white needles, $(C_{10}H_9N)_2AgNO_3$, fusing below 100°C.

On oxidation with alkaline permanganate, lepidin first yields methyl-pyridin dicarboxylic acid, which is subsequently converted into pyridin tricarboxylic acid. Lepidin should therefore be considered as a methyl-chinolin.—*Ber. der Chem. Ges.*, xiii, p. 1639.

The Sweet Principle of the Smilax Glycophylla.—Wright and Rennie have described, in a paper before the English Chemical Society, the results of their study of this Australian plant. It is used there as a remedy for scurvy, etc., but no investigation of the sweet principle seems to have been hitherto made. The aqueous extract of the leaves was first treated with alcohol to precipitate albuminous bodies, filtered and the alcohol distilled off after filtration; the residue was then shaken up with ether two or three times. The etherial extract on evaporation yielded a yellowish crystalline mass, readily soluble in boiling water. This substance on purification yielded a body, $C_{13}H_{14}O_6+2$, or $3H_2O$. Its molecular weight could not be determined. On fusion with potash at 250°, acidifying, etc., an acid, $C_9H_{10}O_3$, melting-point 127° to 128°C., was obtained, giving no color reaction with ferric chloride, and an odor of a phenol when heated with soda-lime. As the original substance extracted from the *smilax* seems to have properties distinct from the active principle of ordinary sarsaparilla and from glycyrrhizin, the authors suggest provisionally the name glycyphyllin.—*Chem. News.*, 43, p. 142.

ON QUEBRACHO BARK.

By Prof. Ed. Schaer.

Translated and abridged from "Archiv der Pharmacie," Bd. xv, pp. 81 to 102, Feb., 1881.

By Frederick B. Power.

As in the case of jaborandi, much confusion has prevailed in medical and pharmaceutical circles with relation to this new medicinal drug, which can only be prejudicial to the proper application or judgment of a possibly valuable medicament. Those interested in the subject will therefore welcome the very serviceable monograph of Dr. A. Hansen in Erlangen ("Die Quebracho-Rinde, botanisch-pharmacognostische

Studie," Berlin: J. Springer), by which it has been made possible to distinguish the genuine quebracho bark from the various false barks, which have long enough maintained the field nearly alone, and by the procuration and pharmaceutical application of the genuine drug, to clear the path for rational medical experiences and judgment in regard to this novelty. The above-mentioned essay, which, besides being accompanied by several explanatory anatomical tables, contains also a series of further pharmacologically important communications, and is deserving, therefore, of special consideration in pharmaceutical circles.

In the following the most important deductions from Hansen's pamphlet will be produced, accompanied by some special notes of the author.

In regard to the derivation of the genuine quebracho bark, it is supposed to be known that it was first, in the course of the year 1878, sent by a resident German in the Argentine Republic, F. Schickedanz, together with other products of the country, to Erlangen, with the observation that the bark had served for a long time in those districts, and particularly in Tucuman and the surrounding country, as a fever remedy, and in many instances in its action was accorded an equal position with cinchona bark. While the bark sent by Schickedanz was obtained from the western portion of the Argentine Republic, where the quebracho tree is said to occur chiefly in the province of Santiago and in the district of Catamarca, it appears, according to other reports, to occur also in neighboring Chili, and may possibly be also found in Bolivia and some districts of southern Brazil.

The above-mentioned quantitatively not significant export was subjected to a double seizure, as simultaneously a chemical examination of the drug was made in Munich, and a series of therapeutical experiments with pharmaceutical preparations of the bark performed by Dr. Penzoldt in Erlangen.

The result of the chemical examination was the isolation of an alkaloid, aspidospermia, by Fraude (see this journal, 1879, p. 192), who, supported by the composition ($C_{22}H_{30}N_2O_2$) and the chemical behavior of this new vegetable base, proved on the one hand its close relation to quinia, and on the other to strychnia.

The medico-clinical experiments, without indeed confirming a decided anti-febrile action, led to the discovery of its beneficial properties in difficulty of respiration, which had not remained unknown in the native coun-

try of the bark, and after the declaration of these results there soon followed from medical and pharmaceutical sections a demand for quebracho bark. In consequence of the difficulty of quickly procuring the genuine drug the supplies were much less than the demand, and as the result of a deficiency of knowledge in regard to its true derivation, various substitutes were created leading to manifold contradictions in regard to the medicinal activity of quebracho bark, which, for nearly two years, had partially found application in the form of two or three other barks, without any certain knowledge prevailing as to their spurious nature.

A very essential part in the confusion with regard to quebracho bark is due to the circumstance that in South America, and particularly in the southern districts, the name "Quebracho" (the etymology of which is derived from the Spanish words "quebrar" [to break] and "hacha" [axe]) is a common designation, a peculiar vulgar name for various heterogenous trees with very hard wood, whereby occasionally the different species of wood and the trees from which they are derived are given in addition thereto, and further distinguished by special adjectives as "blanco, flojo," etc. But even these more complete designations can serve by no means as a criterion, and may vary with the country or province. While the genuine quebracho bark is derived from the apocynaceous Aspidosperma quebracho, *Schlechtendal*, in the western part of the Argentine Republic at least two other trees, a Terebinthacea and an Ilicinea, are designated as "Quebracho," the former with the surname "colorado" and the latter with the attribute "flojo" (soft, loose), the tree Aspidosperma quebracho being known as "Quebracho blanco," and, according to the trustworthy statement of Professor Hieronymus of Cordoba, exclusively so. It was chiefly the tree known in the Argentine Republic as Quebracho colorado which was confused with the Quebracho blanco, and the bark and wood of which was medicinally applied in Europe as "Quebracho" instead of the original Q. blanco bark, the two plants appearing to be closely connected both in relation to their history as also in their technical application.

Both trees, the "blanco" as also the "colorado," were signalized by former travelers in the La Plata States, particularly by Burmeister, who, however, considered the two Quebracho trees as simple varieties, which were distinguished to some extent by the form of the leaf, and particularly by the color of the wood. The portion of the white que-

bracho sent by Burmeister to Europe induced Schlechtendal to determine the species, which he accordingly named "Aspidosperma quebracho blanco," and, misled by the relationship of names, he connected the red quebracho tree as a further species with the name of "Aspidosperma quebracho colorado."

It was more than ten years later that this error was corrected by the publication by Grisebach of the "Plantæ Lorentzianæ" (a revision of the Argentine plants collected by Prof. Lorentz in Cordoba), and, at the same time, reported that the Q. colorado plant, supposed to belong to "Aspidosperma," was a Terebinthacea, and related to the genus "Anacardium." It thereby received a correct description and the botanical name "Loxopterygium Lorenztii, *Grisebach.*"

From a technical view, it remains to be said that the wood of both trees, Q. blanco and Q. colorado, is employed in South American countries for tanning purposes, and has repeatedly figured as such at the world's expositions. The very small amount of tannin contained in the aspidosperma wood (about 3 per cent.) does not permit of its competition with other similar materials, while the loxopterygium wood, with 15 to 20 per cent. of tannin, was introduced some time since into Europe, where it is employed either in the rasped condition or in the form of extract. As this tanning wood occurs in trade under the simple name of quebracho wood, its substitution for the preparations of the bark and wood of Q. blanco, as recommended from Erlangen, was not difficult, and the above-mentioned extract of the Q. colorado wood was therefore also drawn into medicinal use.

The mother-plant of the genuine quebracho bark Aspidosperma quebracho, *Schl.*, is connected with other likewise South American aspidosperma species, amounting in number to as many as 40, and is described as a high, perpendicular tree, with a finely branched summit, the habitus of which is said to resemble the crown of the weeping willow.

The leathery, smooth, lanceolate leaves, whose points terminate in a spine, are arranged to the number of three on each branch. The dichotomously-branched inflorescence shows flowers with a calyx composed of five sepals and a five-partite corolla, five anthers, one style and a superior ovary.

The Quebracho blanco bark from the Argentine Republic, as it occurs in commerce, appears to consist of pieces from the older trees, about 70 years of age, and shows an average thickness of 2 centimeters.

Less frequently younger barks are found with a very moderately developed periderm, or the latter even entirely wanting.

The most striking peculiarity in the outer structure of the quebracho bark is the relatively exceedingly strongly developed cork, which penetrates very deeply into the bark, often to the extent of over one-half. Upon a cross-section of pieces of the bark a boundary line passing approximately through the middle of the bark separates very distinctly the two portions of tissue, the cork and the unchanged bark tissue, which are also sharply distinguished by their color and internal structure. The lens permits of recognition on a cross-section of the cork, the outer surface of which is grayish, or in scarified places reddish, a yellowish-red fundamental mass with tangentially penetrating serpentine lines, differing in color, and between the same plainly evident white points. The inner cortical layer consists for the most part of a light brown, or occasionally also of a much lighter dirty yellow tissues, with very numerous and irregularly distributed whitish dots corresponding to those of the cork tissues.

While the outer bark, which has been converted into bork, possesses a somewhat crumbly consistence, the inner portion of the bark connected with the stem is hard and composed of long, splint-like fragments.

By a microscopical observation of the quebracho bark on a cross section, the outer cortical tissue shows in a marked degree the structural relations which appear in the preponderating cork. In the parenchymatous tissue with brown, often carmine colored cell walls, the above indicated secondary corky layers appear, consisting of uniform rows of smaller, almost colorless cells, and between the same the white points or grains, which are at once recognized as sclerenchyma, or groups of strongly thickened cells, with a small lumen. A very similar structure is shown by the inner cortical layer, situated between the bork and the cambium, although deviating somewhat in the coloration of the cellular tissue; and here also the groups of stone cells, which microscopically form large white points, are dispersed in a brown colored, often also lighter, parenchymatous tissue containing starch, although the tangential cork bands are wanting; and of the radially extending medullary rays, in consequence of the irregular structure of this tissue only a few are plainly recognizable.

Among the mentioned sclerenchyma cells there are many which are distinguished from the others by a particularly uniform circular out-

line of the cross section, and are, in part, combined with them in groups or occur isolated throughout the bark. These peculiar cells, which aggregate particularly in the inner portion of the bark and which cause its fibrous, splint-like structure, prove themselves true sclerenchyma fibres of considerable length, and are characterized by being surrounded by a closed integument, which consists of numerous small cells and each of which contains an oxalate crystal. These integument cells surround, as well upon the cross as upon the longitudinal section, the contour of the thickened fibres most closely, and are organically connected with them, so that the separate fibres, isolated from the tissue, present an over-surface consisting entirely of these small crystal cells.

The occurrence of these spindle-shaped fibres covered with crystal cells, accompanied by the approximately parenchymatous stone cells, which, upon a longitudinal section, appear through the cork as bright, punctate cells, is highly characteristic of the genuine quebracho bark, and *á priori* adapted to distinguish it from the false barks which have appeared in commerce, which is even possible with the use of a strong lens.

It may be observed that, according to Hansen, in the younger barks of the quebracho plant very deviating anatomical relations prevail. The integuments of the crystal ducts first exist after the complete formation of the sclerenchyma fibres and, indeed, from the surrounding parenchyma cells. The formation of the entire duct tissue proceeds quite slowly. Cross sections through younger barks show that nowhere a ring of cells containing crystals surrounds a younger fibre, but that this is closely surrounded by the parenchyma cells of the cortical tissue.

The author subsequently considers the microscopical structure of the wood of quebracho, which, in the case of the true Q. blanco, like the bark, possesses some medicinal activity, although to a very slight extent, and together with the wood of Q. colorado, on account of its extreme hardness, is much employed in its native country for building purposes.

In consideration of the most important false quebracho barks which have served as substitutions for the aspidosperma bark there is to be mentioned, in the first place, a bark which has been much sold and applied as quebracho, although deviating so much from the true Q. blanco bark that its continued substitution is scarcely to be thought of.

The bark in question was soon recognized as belonging to the genus Croton (Euphorbiaceæ) by Pohl, and was afterwards identified by Hansen a copalchi bark, which was long known in the drug market, although now obsolete in pharmacy; it belongs to the group of cascarilla barks and is derived from the Mexican Croton pseudochina, *Schl.* (Croton niveus, *Jacq.*). As is known, the copalchi bark agrees with this false quebracho by occurring in tubular pieces several inches long, provided with a grayish-white powdery periderm, and varies in thickness from ½ to 2 lines. The cross section of the bark shows with the lens a structure entirely different from the aspidosperma bark, *i. e.*, a homogenous yellowish-white outer bark, and a brown bast portion, which, by means of the small bast bundles becoming pointed towards the periphery assumes a flame-like appearance. Moreover, the croton bark possesses a spicy odor and taste, which is not present in true quebracho. Another bark of undetermined botanical derivation consists of dark-brown pieces with a grayish or gray-brown cork layer, and shows many furrows on the inner side, without, however, possessing a similarity with aspidosperma bark. The same may be said of a bark of unknown botanical derivation, which as "Cortex Quebracho verus" has been sold at a high price, and has been found by Hansen to differ from all previous quebracho varieties. This bark, which is also distinguishable from the aspidosperma by a microscopical examination, consists of pieces from 1 to 1½ inch in thickness, of a brown color and firm consistence, characterized by numerous light-colored cork bands on a cross section, and with a slightly developed inner bark. It appears to contain a large amount of tannin, but does not possess the remarkable bitterness of the genuine quebracho bark. Finally, the bark of the Q. colorado tree appears occasionally to have taken the place of the "Q. blanco" bark, although it can hardly be confound with the true quebracho.

The Q. colorado bark is of a brown or dark-brown color on the exterior and possesses frequently a covering of lichens. The cross section is light-brown and shows concentric darker cork bands, as also light radially extending lines, which prove to be the medullary rays. Between these latter uniformly arranged groups of sclerenchyma fibres are situated, which groups, several in number and standing behind each other, impart to the bark a checkered appearance. Although these fibres show a structure similar to the crystal-covered fibres of the aspidosperma bark, they are, however, considerably smaller and are

situated not alone, but, as stated, in bundles of nearly right angular form. By the use of a lens, or by microscopical examination, the bark of Q. colorado may thus be easily distinguished from the Q. blanco, even when the difference in taste is not considered.

In concluding his valuable review of quebracho bark the author gives also a sketch of the development of the chemistry of the subject, for the principal results of which the reader is referred to abstracts in this journal (1879, p. 192 and 554–557), as also to the more recent contribution of O. Hesse, contained in the last number.

PHARMACEUTICAL NOTES.

By Robt. F. Fairthorne, Ph.G.

Meigs' Mixture of Gentian and Iron.—As this is not unfrequently called for, it may be as well to give the formula and mode of preparation, as ordered by Dr. J. F. Meigs of this city:

℞	Ferri et ammonii citratis,	℥i
	Extr. gentianæ fluid.,	f℥ss
	Spirit. lavand. co.,	f℥i
	Spirit. vini rect.,	f℥ss
	Sacchar. alb.,	℥iss
	Aquæ, q. s. ut. ft.,	f℥viii

Mix the extract with 1 ounce of water, and add the compound spirit of lavender, treat this with hydrated oxide of iron, and, having filtered it, mix with the other ingredients and filter.

Chloralum.—This appears to be simply a solution of chloride of aluminum, and has the specific gravity of 1·244. (For analyses see "Amer. Jour. Phar.," 1872, p. 268 and 397.) An imitation of it can be made by mixing alumina with about twice its bulk of water, and dissolving this base in strong muriatic acid, by the aid of heat, in a capsule, and continuing the evaporation until any excess of uncombined hydrochloric acid is driven off; when cool dilute the solution with sufficient water to reduce the specific gravity to 1·244 at 60°F. Should any deposit occur before adding the water the solution should be first filtered through cotton.

Elixir Glycyrrhizini.—This will be found unusually effectual in disguising the bitter taste of quinia, and is prepared by the following formula: A tincture of liquorice is made first, from which the sweet principle is obtained thus:

Take of	Liquorice root, in moderately fine powder,	℥viii
	Liquor ammoniæ, ...	fʒii
	Glycerin, ...	fʒi
	Dilute alcohol, . .	sufficient quantity.

Mix the glycerin, solution of ammonia and half pint of diluted alcohol. With 2 fluidounces of this mixture moisten the liquorice root; pack in a percolator and pour on the remainder. Displace with dilute alcohol until 8 fluidounces of tincture are obtained. In order to obtain the glycyrrhizin add nitric acid to it in small portions at a time as long as any precipitate occurs; set aside in a cool place (an ice chest, for instance) for 5 or 6 hours. Pour off the supernatant clear fluid, which is thrown away, and place the remainder on a paper filter. After the liquid portion has been thoroughly drained carefully scrape off the solid, which is impure glycyrrhizin. This is placed in a mortar and dissolved in 2 fluidounces of water by means of solution of ammonia, which is to be added very carefully so as not to have any excess. Filter the solution, and add it to the following mixture, namely:

Glycerin, ...	2 fluidounces
Syrup, ...	3 "
Curaçoa cordial, ...	4 "

Water, sufficient to make the elixir measure 12 fluidounces, and filter.

Ammonium Bitartrate.—When a strong solution of tartaric acid is added either to the stronger solution of ammonia or to a saturated solution of ammonium carbonate, so that there will be an excess of acid, a white crystalline precipitate is produced corresponding in appearance and taste to cream of tartar. This salt, which may also be prepared by mixing concentrated solutions of 1 part of ammonium chloride and 3 parts of tartaric acid, may possibly find a place either commercially or medicinally amongst the useful articles of trade or medicine.

Powdered French Chalk; some of its Uses.—This common article will be found useful to the druggist for many purposes. In using the pill compressing machine, for instance, its peculiar property for preventing adhesion will be duly appreciated by all who try it. When used for this purpose all that is necessary is to place it in a deep box (a 4-oz. turned wooden one will do), which should be half full, and after each pill has been finished and taken out of the mould the die should be dipped into the powder, when sufficient will be found adher-

ing to the sides to prevent the next pill from sticking. It takes but a moment, and will save much trouble to the operator.

Another use for which I have found it particularly serviceable has been in making hand-made suppositories; and, in connection with this subject, I would state that there are certain mixtures ordered occasionally by physicians that cannot be made well with melted butter of cacao and moulded. In such cases I have found it best to make them by mixing the medicinal ingredient in the mortar with the butter of cacao in powder, then, by warming the pestle over a spirit lamp several times, a degree of temperature is given to the fat by which it becomes adhesive enough to form a mass which, with care, can be rolled out in the same way that a pill mass can in cylindrical form, and of such length that when divided into parts corresponding to the number of suppositories wanted, each part should be of such a length and size that would be proper for making a suppository, which can be done by carefully pointing one end by pressure and warmth of the fingers. When the mass is taken out of the mortar, before rolling the hands are covered with the French chalk powder, which prevents it sticking. In this manner suppositories quite satisfactory in appearance can be made in half the time required if moulded after the cacao butter is melted.

Syrupus Ipecacuanhæ. By Edward J. Lawall, Ph.G.—The following formula will yield a syrup which keeps unchanged for more than a year. Moisten ipecacuanha in moderately fine powder ℥ii with alcohol and pack firmly in a cylindrical percolator; pour upon it two fluidounces of alcohol, and when this has been absorbed 8 ounces of a mixture of two parts of alcohol and one of water; continue the percolation with diluted alcohol until 10 fluidounces of tincture have passed, setting aside the first two ounces so that they may evaporate spontaneously to a syrupy consistence. Mix the acetic acid with the remainder of the percolate. evaporate in a water-bath, with frequent stirring, to 2½ ounces, add to the reserved portion, mix the whole with 10 ounces of water and continue the evaporation until reduced to 14 ounces. When cool, filter through paper and pass sufficient water through the filter to obtain 14 fluidounces, in which dissolve 18 troy-ounces of sugar by agitation; then add 4 fluidounces of glycerin and sufficient simple syrup to make the whole measure 32 fluidounces.

PRACTICAL NOTES FROM FOREIGN JOURNALS.

By the Editor.

The Ferments of Pancreas.—According to A. Bechamp, the microzymes are readily obtained, particularly in winter, by grinding the pancreatic gland with water containing a little alcohol, and by filtering and washing. Obtained from the pancreas of the ox, they resemble beer yeast in appearance. They are freed from a layer of fat by treatment with ether, and from all soluble substances by washing with water. Viewed under the microscope, they are scarcely 0·0005 mm. in diameter, are free from bacteria, have a grey-brown color, liquefy starch paste very rapidly, and impart to water by maceration the same property. From 20 beef pancreas the author obtained 130 grams moist microzymes, containing 12 per cent. of dry substance. Of these, 3 to 4 grams would dissolve 36 to 45 grams moist, but well pressed, fibrin in 1 or 2 hours; casein, musculin and acidalbumin (prepared from fuming hydrochloric acid and albumen) require a somewhat longer time.

The pancreas peptone differs from the peptone of the stomach in the former, producing with albuminoids crystalline compounds like leucin, etc. From 15 grams dry fibrinin and 6 grams pancreatic microzymes (0·8 grams dry substance) 2·5 grams crystallized products were obtained. The active substance of the pancreatic gland has been named *pancreazymase.* The microzymes do not lose their activity by acting upon albuminoids, but may be used again. Acting even upon casein, not the slightest trace of putrid odor is observable after 24 hours. The author regards these microzymes as cells with soluble contents in an insoluble shell, the former being capable to penetrate the latter.—*Chem. Centralblatt,* 1881, p. 152, *Compt. Rend.,* vol. 92.

Dry narcotic extracts of excellent quality are obtained, according to W. Kirchmann, by mixing the extract with an equal weight of exsiccated sodium sulphate, drying the mixture completely at a temperature not exceeding 50°C., and adding sufficient exsiccated sodium sulphate to make the weight of the mixture equal to twice the weight of the extract employed.—*Phar. Zeitung,* 1881, p. 116.

Unguentum Acidi Borici, Lister's Salve.—The formula—boric acid, white wax, each 1·0; paraffin, 2·0; expressed oil of almond, 6·0—yields a salve which, particularly in cold weather, is brittle like wax.

A formula proposed as a substitute directs boric acid, 2·0, to be dis-

solved in warm glycerin, 6·0, the solution to be incorporated with a mixture of paraffin and soft paraffin, 12·0; but this does not yield a uniform ointment.

Krapfenbauer recommends the following modified formula: Melt paraffin, 9·0; add oil of almond, 13·0; when cold mix by trituration with finely powdered boric acid, 6·0, and soft paraffin, 8·0. The consistence is unobjectionable, and the ingredients do not separate on keeping the salve for years.—*Ibid.*, p. 184, 215.

Antiseptic powder with carbolic acid is prepared by P. Bruno by melting together rosin, 60·0, with stearin, 15·0, and adding to the cooling but still liquid mixture carbolic acid, 25·0, which is to be carefully triturated with 800 grams of precipitated calcium carbonate, until a uniform powder is obtained.—*Phar. Post*, 1881, p. 133.

Salicylated starch, recommended by Dr. Kersch in eczema, is prepared by adding pure starch in small portions to a rather large quantity of a 2 or 3 per cent. solution of salicylic acid in alcohol, agitating well after each addition. The excess of liquid is decanted, the starchy mass enclosed in muslin, well pressed, rubbed into powder and dried at about 80°C. A similar intimate mixture of salicylic acid with starch cannot be prepared by even long-continued trituration of the two substances.—*Ibid.*

Lister's antiseptic gauze is prepared, according to C. Merciéres, by melting together resin 5 parts, paraffin 7 parts and crystallized carbolic acid 1 part, and dipping into the mixture for about 5 minutes pieces of unsized gauze or muslin. The excess of the mixture is removed by slight pressure, the fabric is spread out in layers, covered on both sides with pieces of gauze to prevent the dropping off of the carbolic mixture, and, after having been placed between two slabs of marble for about 12 hours, completely dried by exposure to the air.—*Archiv d. Phar.*, Feb., 1881, p. 148, from *Rép. de Phar.*

Preparation of Chlorine.—J. Townsend has succeeded in utilizing the almost worthless magnesium chloride obtained in working the Stassfurt salts. A solution of the refuse salt, of 40 to 50°B., is mixed with about 10 per cent. of manganic oxide, and by means of hot air heated to 113°C. The evolution of chlorine may be made continual by the addition of hydrochloric acid from time to time.—*Chem. Ztg.*, 1881, p. 198.

Stability of Calomel.—Mixtures of calomel with sugar, milk sugar, gum arabic, liquorice root, marsh mallow root and aloes were made by

Paul Merres in different proportions, and kept in the state of powder as well as in pills, in a room, in the cellar and in the drying closet, in the latter at a temperature of 38 to 45°C. After 9 months the powders and pills were examined for corrosive sublimate, by treatment with alcohol and testing the solution with H_2S and with metallic copper; not a trace of mercuric chloride was detected. It was proven by control experiments that by the means indicated mercury could be detected in the solutions in a dilution of 1 in 20,000.—*Archiv d. Phar.*, Feb., 1881, p. 135.

Chinoidin borate is prepared by De Vrij by heating 2 parts of chinoidin and 1 part of boric acid with 20 parts of distilled water just to boiling, and filtering the liquid, after a few moments rest, through a plug of moist cotton, in order to separate some resinous particles. The undissolved portion yields, after drying and triturating, a brown powder, infusible upon the water-bath, and, though soluble in dilute mineral acids, consisting of several unknown compounds, but free from that alkaloid to which the name chinoidin properly belongs, namely, Hesse's diconchinia. This has been dissolved by the aid of the boric acid. The clear solution is heated to boiling, when a turbidity and the separation of a dark brown resinous body takes place, from which the clear liquid is decanted. The heating, just to boiling, is repeated until no further separation occurs, and the resulting turbidity completely disappears on cooling. The liquid is evaporated to the weight of the chinoidin used, set aside over night at a temperature not exceeding 15°C., and then separated from the excess of boric acid, which has crystallized out and may be reserved for a subsequent operation. The clear liquid is then evaporated by meas of a water-bath to a dry yellowish powder, or it is dried in scales.

Well prepared chinoidin borate yields with 3 parts of cold water a clear dark yellow solution, having an alkaline reaction to test paper. The 10 per cent. solution remains perfectly clear on the addition of a few drops of solution of sodium hyposulphite. A solution of 1 gram of the borate, agitated with a little caustic soda and chloroform, yields a chloroform solution which on evaporation leaves at least 0·54 gram amorphous alkaloid. Chinoidin borate is somewhat hygroscopic, and must be kept in well closed bottles.—*Phar. Zeitg.*, 1881, p. 162, from *Nieuw Tijdschr.*, Feb.

Quinia Sulphate and Musc.—Bagros observed while making pills that the odor of musc completely disappeared and that of liquorice

root became apparent; the pills were composed of quinia sulphate, 0·6; musc, 0·2; mucilage and powdered liquorice root, sufficient for 6 pills.—*Archiv d. Phar.*, Feb., 1881, p. 148, from *Rép. de Phar.*

Preservation of Filix mas.—According to J. B. Enz, the rhizome collected in autumn is cut and mixed with a little alcohol; the green color of the parenchyma changes to a reddish-brown, but the odor of butyric acid is not developed, as is always the case with the rhizome preserved in the dried state. Protected from decomposition by alcohol, the rhizome may be used for infusions, etc.

Preservation of Arum.—The tubers of Arum maculatum, which resemble our Indian turnip in acridity, retain their properties at least for a year if kept under sand in the cellar; but for a much longer time if immersed in alcohol and kept in well closed vessels, protected from the light.—*Archiv d. Phar.*, March, 1881, p. 199.

Testing Oil of Rose.—A. Ganswindt recommends the following tests: Agitate 1 drop of the oil with 45 grams of warm water, and sprinkle the solution in a moderately warm room, which will soon be filled with a rose odor, in which foreign odors may be detected without difficulty. An adulteration with a fixed oil produces a permanent grease stain upon paper, and spermaceti is left behind on the evaporation of a few drops of the oil from a watch crystal in a water-bath. On mixing a few drops of pure oil of rose with an equal bulk of sulphuric acid, the rose odor is not changed, but oils used for adulteration change their odor, which becomes apparent in the rose odor. Or 5 drops of the oil are mixed in a dry test tube with 20 drops of pure concentrated sulphuric acid; when the mixture is cool it is agitated with 20 grams of absolute alcohol, when a nearly clear solution should be obtained, which, heated to boiling, remains clear yellowish-brown on cooling. In the presence of the oils of rose geranium, palma rosa, etc., the alcoholic mixture is turbid, and on standing separates a deposit without becoming clear.—*Seifens. Ztg.*, 1881, p. 32.

Phosphorescent Paint.—Well cleaned oyster shells are burned, rubbed to a fine powder and packed into a crucible in layers alternating with layers of sulphur; the crucible is closed with a cover and cement, and when perfectly dry is placed in the fire for one hour. After cooling, the finest particles are sifted off, mixed with weak glue water, and with this two thin coatings are applied. This paint, after exposure to the direct sunlight, is luminous in the dark.—*Pol. Notizbl.*, xxxvi, p. 30.

Storax and Sulphuric Acid.—E. Mylius observed that by mixing storax with an equal weight of pure concentrated sulphuric acid, diluting the solution with water and washing the precipitate, different results are obtained according to the temperature of the mixture; if kept cold, the precipitate produced by water on being treated with ether will leave about 10 per cent. of slender white crystals nearly insoluble in ether. But if heat was generated on mixing the storax and sulphuric acid, the precipitate by water was completely soluble in ether, yielding a nearly black solution.—*Phar. Zeitung*, 1881, p. 140.

Syrupus pilocarpi.—100 gm. jaborandi leaves are macerated with the same quantity of alcohol for three hours; sufficient boiling water is then added to obtain 1000 grams infusion in which 1,800 grams sugar is dissolved.—*Ibid.*, 208.

Granular Effervescent Citrate of Iron.—Citric acid 40, sodium bicarbonate 50, and ammonio-citrate of iron 10 parts, all in fine powder, are mixed and in a flat vessel gradually and with continued stirring heated to about 100°C., when the mixture becomes granular and is preserved in well stoppered bottles.—*Ibid.*

Mustard for Table Use.—An aromatic vinegar is prepared by macerating for a week 120 grams onion, 20·0 garlic, 30·0 pepper, 100·0 bay leaves (laurus nobilis) and 300·0 table salt with 8 liters of good vinegar and dissolving in the strained liquid oil of esdragon 2·0, oils of parsley and of celery each 1·0, and oils of allspice, cinnamon, cloves and nutmeg each 0·5 gram. To prepare the mustard a convenient quantity of the ground seeds deprived of the fixed oil is mixed with sufficient of the above vinegar to form a thin paste and after macerating in a covered vessel for several days sufficient of the vinegar is added to render the mixture semi-liquid.—*Ibid.*

A Material for Filtration and Decolorization, recommended by G. C. Pfandler, London, consists of three parts of dried or baked granulated clay, mixed with four parts of blood; sometimes a proportion of charcoal is added. The mixture is moulded into lumps of convenient form, dried, broken into small pieces, mixed with an equal bulk of granulated clay, and then carbonized in a retort.—*Scientific American*, Feb. 5.

CULTIVATION OF RHUBARB IN FRANCE.

The cultivation of *Rheum undulatum* and *R. rhaponticum* has for some time past been carried on profitably at Clamart, near Paris, and the products of both plants, as so cultivated, are confounded in commerce under the name of French rhubarb. Recently, M. Gallais has been making some experiments in the cultivation of *Rheum officinale* at Ruffec, in the Charente department, and he has communicated his manner of proceeding and results to the Paris Société d'Acclimatation.[1]

In the selecting of a suitable spot for the experiment, M. Gallais states that he was guided by the following considerations: The *Rheum officinale* grows in Asia, between the 30th and 39th parallels of latitude, at an elevation of 4,000 feet above the sea level. The isothermal line of 12·9° of temperature passes by Pekin, of which the latitude is 39° 54′ 13″ N., and above Milan rises to latitude 45° 54′, running to the west of Europe. By taking this isothermal line and adding half a degree of temperature for each degree of latitude towards the south, and deducting one degree of temperature for each 172 meters of elevation above the level of the sea, he arrived at the conclusion that in the natural habitat of the plant the average climatic temperature was 19° in summer and zero in winter. Ruffec, the place where M. Gallais' experiment has been carried on, is situated in latitude 46° 11″ N., longitude 2° 8′ 17″, has an average temperature of 17°C. in summer and 1·2°C. in winter, and is at an elevation of 96 meters above the sea level.

According to the analyses of Fremy and Pelouze, the rhubarb plant is rather rich in potash and sulphuric acid, less so in silica, more or less rich in lime, and rich in phosphoric acid. The soil at Ruffec is calcareous, sandy and very nitrogenous, being composed partly of sands proceeding from old degradations. These sands contain a considerable abundance of silicious and aluminous matters. The soil is very permeable, requiring during the summer months about 5 cubic meters of water per acre.

M. Gallais commenced operations with a plant obtained from Dr. Giraudeau, which, in its turn, was derived from the original plant grown in the Botanical garden of the Paris Medical School, from which

[1] "Bulletin" [3], vol. vii, p. 667.

the species *Rheum officinale* was described by Professor Planchon in 1872.[1]

The plant cultivated in the shade, with a northern exposure, and in moist places, developed a luxuriant vegetation, both in the size of its root and the amplitude of the leaves. But the product under such conditions appears to have been of doubtful quality.

Whilst working upon the plant in the spring a very short stem was noticed, appearing like a ball covered with black scales, from which issued in the first days of March an enormous bud, resembling, both in size and color, a hen's egg. This bud gradually developed and gave off leaves, which in the first year of the plantation attained a diameter of 1 meter.

In the month of June, desiring to develop a vigorous vegetation whilst preserving the medicinal principles, M. Gallais dressed each of the plants with 100 grams of Peruvian guano. Being freely watered, the root then grew considerably and formed upon every side axillary buds, which produced in their turn leaves that were smaller than those which issued from the parent stem. Such buds, in developing, give rise in the prolonged stalk to changes which, upon section, become apparent as the marblings that are held as characteristics in commerce, and are the work of nature only. The plant was left during the second year, with only such attention as was necessary, to gather strength and to allow its cellular structure to become more compact by the concentration of its particular juices.

The collection was made at the end of the second year; in the case of the plant growing spontaneously, the Chinese are said not to make a collection until the end of the sixth year. The art of cultivating this plant for medicinal purposes, M. Gallais considers to lie not only in assisting the growth of the plant, but in favoring the development of the active principles, so that the plant may arrive in a couple of years at the age which, when growing wild, it attains in six. The known characters of French rhubarb he attributes to the collection having been made before the plants had arrived at maturity. As to reproduction, M. Gallais has obtained the best results with offshoots. At Ruffec the plant seeds with difficulty in the second year, and its cultivation from seeds is not always successful, especially in rainy and cold seasons.

[1] See "Pharmaceutical Journal" [3], vol. iv, p. 690.

Every second year, in July or August, according to the season and the growth of the plant, the roots or prolonged stems were collected, and from these stalks a considerable number of offsets or buds were separated with a knife. The offshoots were then planted quincuncially in well-prepared soil, with a clear interval of a meter between each. As soon as the rainy and cold season set in these offsets commenced to develop, and continued during the autumn, forming rounded roots, which have supported the severest cold of the district, reaching 13° below zero.

Last year M. Gallais possessed eighteen plants, which, when pulled up, cleansed and dried, yielded 28 kilograms of product, described as being of good quality, and samples of which were exhibited to the Society. The gathering and drying, however, are looked upon by M. Gallais as more important operations than even the cultivation.

In the month of August the leaves of the plant become completely dry, and a period arrives when usually the soil surrounding the stem cracks and exposes the enormous roots. It is just at this time of apparent stagnation that M. Gallais pulls up the roots and "divides them most artistically into pieces to imitate those imported, whether from Tartary, Russia or Persia." These pieces are cleansed carefully and thrown at once into clean water that has been acidulated by some vinegar or a few drops of sulphuric acid, in order to prevent their becoming blackened or taking a bad color through exposure to the air. After a momentary immersion they are drained on hurdles and placed immediately in a stove at a temperature of 30°C. This operation has for its object to form a hard casing around the pieces, to compress the juice and to prevent mouldiness and consequent fermentation. after some days of continued drying, the pieces are strung upon cords so as to form large chaplets, and these are hung in a bake-house or kitchen chimney, or, when the quantity makes it worth while, in a stove. It is said that the Tartars attach small chaplets of rhubarb to the horns of their goats and sheep, and thus dry them by exposure to the sun's rays. M. Gallais thinks, however, that another account is more correct, which says that the rhubarb, cut into fragments and cleansed, is placed by the natives upon slowly heated stones, and carefully turned from time to time, being afterwards strung to complete the drying process. He is inclined to believe, however, that a quicker drying would be preferable, and proposes to place some of his next yield in an oven immediately after the removal of the bread.

Last year M. Gallais made the experiment of drying the root in the sun, but the result was not satisfactory. The thick pieces dried slowly and became completely decolorized, instead of retaining their dirty yellow tint, whilst the cellular tissue underwent a considerable alteration, due to a slight fermentation. M. Gallais considers that these alterations would be prevented by a rapid drying, and the juice being concentrated in the interior of the piece its aroma would be preserved, whilst the pieces would consequently acquire a commercial value in proportion to their thickness.

M. Gallais' operations have as yet been carried on upon a limited scale, but he makes an estimate in which he values the product at six francs per kilogram, from which it would appear that the cultivation could be carried on profitably.—*Phar. Jour. and Trans.*, March 12.

THE COLOR OF FLOWERS.

At a recent meeting of the Vaudois Society of Natural Science, Professor Schnetzler read an interesting paper on the color of flowers. Hitherto it has generally been supposed that the various colors observed in plants were due to so many different matters—each color being a different chemical combination without relation to the others. Now, however, Professor Schnetzler shows by experiment that when the color of a flower has been isolated by putting it in alcohol, one may, by adding an acid or an alkali, obtain all the colors which plants exhibit. Plants of Pæony, for example, yield, when macerated in alcohol, a violet-red liquid. If some acid oxalate of potassa be added, the liquid becomes pure red; while soda changes it, according to the proportion used, into violet, blue or green. In the latter case, the green liquid appears red by transmitted light just as a solution of chlorophyll does. The sepals of Pæony, which are green bordered with red, become wholly red when placed in a solution of acid oxalate (binoxalate) of potassa. These changes of color, which may be obtained at will, may quite well be produced in the plant by the same causes; since, in all plants, there always exist acid or alkaline matters. Further, it is stated that the transformation from green into red, observed in the leaves of many plants in autumn, is due to the action of the tannin which they contain, on the chlorophyll. Thus, without desiring to affirm it absolutely, Professor Schnetzler supposes, *à priori*, that there is in plants only one coloring matter—*chlorophyll*, which,

being modified by certain agents, furnishes all the tints that flowers and leaves exhibit. As for white flowers, it is well known that their cells are filled with a colorless fluid, opacity being due to air contained in the numerous lacunæ of the petals. On placing the latter under the receiver of an air-pump they are seen to lose their opacity and to become transparent as the air escapes from them.—*Journal of Applied Science*, February 1, 1881.

Petrolatum is the designation adopted for soft paraffin to be introduced into the new pharmacopœia, in place of saxolinum (see p. 34), which name, before its selection, had been appropriated and copyrighted.

Eruption from Poison Oak.—A saturated solution of hyposulphite of sodium is recommended in medical journals, the affected parts to be kept constantly wet with the solution. The remedy did not originate with Prof. Maisch, who is credited with it by several journals.

Remedy for Frost-bites.—In the "Med. and Surg. Reporter," March 26th, Dr. H. E. H. Barnes recommends a mixture of equal parts of copaiba and oil of turpentine, with which the parts are to be kept constantly saturated, and covered with absorbent cotton. It may be applied in an ulcerated or even gangrenous condition, has a soothing feeling to the patient, and rapidly restores the circulation to its normal condition.

Calycin is a golden yellow crystalline, tasteless substance which was obtained by O. Hesse from Calycium chrysocephalum, a yellow lichen growing upon oaks, birches, firs, etc., by treatment with boiling ligroin. It is sparingly soluble in cold ligroin, benzin, ether, alcohol and glacial acetic acid, somewhat more soluble in chloroform, has a neutral reaction, melts at 240°C. and sublimes in red prisms. Its composition is $C_{18}H_{12}O_5$ and it is the anhydrid of *calycic acid*, which is formed by treating calycin with hot alkaline or earthy carbonates in the presence of water, and on being liberated by hydrochloric acid, again yields calycin. On heating with concentrated potassa solution a trace of oil, probably toluol, distils over, and the calycin with the assimilation of $3H_2O$ is split into oxalic acid, $C_2H_2O_4$, and alphatoluylic acid, $C_8H_8O_2$.—*Ber. deutsch. Chem. Ges.*, 1880, p. 1816.

MINUTES OF THE PHARMACEUTICAL MEETING.

PHILADELPHIA, April 19, 1881.

In the absence of the President, Mr. Alonzo Robbins was called to the chair. The minutes of the last meeting were read and approved.

The Registrar presented, on behalf of Dr. Robert Bridges, a copy of H. C. McCook's treatise on the Natural History of the Agricultural Ant of Texas, and from the Smithsonian Institution a copy of the report of that institution for the year 1879. Both gifts were received with the thanks of the College.

Prof. Maisch presented a copy of the proceedings of the American Pharmaceutical Association for 1880, and also treatises entitled, "Lehrbuch der Gährungschemie," and "Beiträge zur Lehre über den Sauerstoffbedarf und die gährungserregende Fähigkeit der Hefepilze," by Dr. Adolph Mayer.

Mr. Gustavus Pile read a paper on an instrument for noting the dilatation of liquids for any given temperature. The intrument was presented to the College and the paper referred to the Publishing Committee (see page 225).

Prof. Maisch read a paper upon Gum acaroides and other allied resins (see last month's minutes). The paper was referred to the Publishing Committee (see page 217). A sample of the acaroid resin was again exhibited and extracts were read from the reports of Redford and Simmonds, referring to the uses for which this product had been recommended.

Prof. F. B. Power read a paper upon resorcin, which was referred to the Publishing Committee (see page 221). In connection with the subject before the meeting, Prof. Power exhibited a specimen of white crystallized resorcin, and Prof. Maisch a specimen of the same substance not quite pure but being of a fawn color. The latter referred to a discussion recently had before the Pharmaceutical Society of Great Britain (see this volume, page 36), on which occasion resorcin of a mahogany color was also exhibited, and expressed his concurrence in the expression of Mr. Greenish that the dose of a substance containing an unknown amount of impurity, as resorcin of different shades of brown necessarily must contain, could scarcely be defined.

Prof. Sadtler called attention to the fact that at a previous pharmaceutical meeting (see "Amer. Jour. Phar.," 1879, p. 276) he had explained the formulas of resorcin, resorcin-phthalein (fluorescein), phenol-phthalein, of tetrabromfluorescein (eosin) and of uranin; also that the antiseptic characters of resorcin alluded to by Dr. Power might have its explanation in the character of it as a diatomic phenol; that, taking the monatomic phenols carbolic acid, cresol, thymol and carvacrol, the derived phenols contained in creasote, the diatomic phenol resorcin, the triatomic phenol pyrogallol or pyrogallic acid and the half-phenol salicylic acid, we had a series of bodies all possessing the antiseptic properties in a more or less marked degree. Three of these were thoroughly recognized in this connection, viz., carbolic acid, salicylic acid and thymol, and it seemed probable, as

far as experiments go, that all of those mentioned might be found to be of power in this way.

A specimen of Quebracho bark (Aspidosperma quebracho) was presented, which has had attention directed to it of late years as a remedial agent, and also as a material for tanners' uses. This specimen was imported by a New York firm from Buenos Ayres.

There being no further business, the meeting, on motion, adjourned.

T. S. WIEGAND, *Registrar.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

PHILADELPHIA COLLEGE OF PHARMACY.—Thirteen years ago this College erected the building in which its lectures have since been delivered. Two lecture rooms, each seating over 325 persons, were then supposed to accommodate the classes for many years to come. Two years ago an elementary course of instruction was arranged with the view of imparting in the three branches taught—Materia Medica, Pharmacy and Chemistry—that knowledge, the possession of which is necessary for deriving substantial benefit from the lectures as delivered in the final or senior course. Meanwhile the means of instruction in the various departments have been continually amplified, and the laboratory instruction, though only elective, met with such favor that during the past winter the working tables had to be increased from 32 to 48, the utmost capacity of the hall set apart for that purpose. This increase even proving insufficient, the College at its annual meeting sanctioned the steps taken by the Board of Trustees for the increase of the facilities of instruction and the accommodation of a still larger number of students in the practical branches; these improvements are now in progress and will be finished during the coming summer.

A year ago the College purchased in the rear of its present lecture hall six dwellings, five of which have been torn down, and upon this site there is now in course of erection a four-story building, extending the present one as far back as Elwyn street. The new building will contain on the ground floor the chemical laboratory with its various accessories. Sixty working tables will be provided, and there will be room for increasing this number considerably. The second floor is intended for the pharmaceutical laboratory, and will be provided with permanent facilities, which heretofore could not be procured, since the same locality had to be used for instruction in practical pharmacy and chemistry. The third floor will be a lecture room equal in size to each of the two old lecture rooms; it will be occupied by the Professor of Chemistry, while the older ones will be used exclusively for the lectures on pharmacy on the second floor, and on materia medica and botany on the third floor.

The fourth floor of the new building will be divided into three rooms for the accommodation of the Alumni Association and of the Zeta Phi and Alpha Phi Societies of the students. Access to the different floors of the new building will be had on the north side through a tower containing the

staircase and additional entrances into the present lecture rooms, from which a direct communication will also be made with the adjoining rooms in the new building, while the stairway in the present building remains intact.

The College will then have, besides an outlet on Cherry street, its main entrance as heretofore on North Tenth street, and a second entrance on Elwyn street, and each room will have two outlets, one into the tower containing the new stairway, and the other towards the old stairway in the Tenth street building. All the details of ventilation, lighting, heating, water supply and drainage have been carefully considered and will be properly provided for.

In 1870, the practical instruction in the laboratory was commenced under the temporary supervision of Prof. Maisch, and this temporary arrangement has been continued until the close of the last session. Meanwhile, the instruction in pharmaceutical manipulations and processes had been separated and placed in charge of Prof. Remington, under whose care this branch has grown to such an extent as to render more room and greater facilities necessary, which will be amply supplied in the new edifice.

The school of chemistry, extended as it will be hereafter, will require the undivided attention of the superintendent, for which position Frederick B. Power, Ph.G., has been selected with the title of Professor of Analytical Chemistry. Prof. Power is a native of Hudson, N. Y., served an apprenticeship in the apothecary's business and graduated at the Philadelphia College of Pharmacy in 1874. He prosecuted his studies subsequently at the University of Strassburg, where, in the different branches of chemistry, he received the instructions of Rose, Fittig and Flückiger, and acted for some time as the assistant of the latter. In 1880, at Strassburg, he received the degree of doctor of philosophy, and during the session 1880 and '81, he was Prof. Maisch's assistant in the college laboratory, which has now been placed in his charge. Prof. Power is already favorably known by his researches, and in his new field of labor will, we feel assured, give his earnest efforts to the promotion of the school.

As a result of the improvements described above must also be mentioned the fact that the present museum will be considerably enlarged, to the size of the present lecture rooms, 50 x 43 feet. Opportunity will thereby be afforded of displaying several valuable collections of East Indian, Japanese and Australian drugs, in addition to the present large collections of indigenous and foreign drugs.

The library has been growing steadily and has nearly outgrown the capacity of the room assigned for this purpose. With the view of relieving the room to a certain extent of its overcrowded condition, the office of the actuary and of the business editor of the JOURNAL will be removed from it to the two-story building, No. 143, adjoining the entrance to the College on North Tenth street. The front room of the building will be used for the office of the editor and business editor, and the second story for the storage of the stock of journals and of the exchanges. In the rear of the JOURNAL office and communicating with it a one-story building has been erected which will be the office of the actuary for the transaction of

the business appertaining to the college. The room is 33 feet long and communicates also with the hallway of the college building, from which access will be had to it.

It will be observed that with the completion of the extension and alterations, the members of the College, its officers, the students and all who may have business to transact with either the College or JOURNAL will enjoy greater facilities than heretofore. The cost of these changes will probably exceed $20,000, in which sum the procuring of new apparatus is not included, such as are obtained every year by the professors and the College for illustrating the lectures.

THE PHYSICIANS AND PHARMACISTS OF WASHINGTON, D. C.—For a long number of years the relations existing between the professions of medicine and pharmacy in this city have been of the most amicable sort. Whenever the usual questions of contention have agitated the physicians and pharmacists elsewhere, here we have flattered ourselves that the *entente cordiale* which had so long prevailed could not be broken by any such distracting elements. In all of our efforts to promote pharmacy we have, whenever needed, had the aid and encouragement of the medical profession to the fullest extent, and, I believe, have at all times enjoyed their confidence, and, in turn, they have certainly had our fullest confidence and commanded our highest respect. Notwithstanding all this, as it shall presently appear, we were destined to be the victims of the same disturbing cause that has brought trouble to the medico-pharmacal hearth-stone in other cities.

A month ago the Medical Association addressed a request to the National College of Pharmacy asking the appointment of a committee to confer with a like committee on their part on some irregularities said to be practiced by some of the druggists of the city. The committee was appointed and a conference had, when it was disclosed that the irregularity complained of was the habit of some pharmacists, whose names were not given, of prescribing for the sick. An informal discussion of the subject did not result in any method being adopted to cure the evil, so the joint committee adjourned without action. The committee representing the Medical Association made their report of non-action to that body, whereupon that committee was discharged and a new one appointed, consisting of Drs. Prentiss, Walsh and Magruder, three gentlemen eminently qualified to discharge the duties imposed upon them. Messrs. Ferguson, Becker, Duckett, Dowling and Thompson were the committee on the part of the College, and had not been changed from the first. At the request of the Medical Committee a second conference was held, when the subjects of pharmacists prescribing and physicians dispensing medicines and the renewal of prescriptions were fully, fairly and frankly considered and discussed in all their phases.

The first subject was readily disposed of; the last one was not so easy to determine, the difficulty appearing to arise entirely from the different stand-points—medicine and pharmacy—the subject was viewed from. The physician claimed unlimited control over the prescription as *his* property, over which the pharmacist had no right or power except as the

agent of the physician in compounding it, and also a sort of *quasi* right to control the practice of pharmacy, because medicine and pharmacy at some remote time were one and the same thing.

The pharmacists expressed a willingness in refusing to renew prescriptions so far as the refusal related to the protection of the public. As to the ownership of prescriptions they, as pharmacists, were obliged to recognize possession as carrying with it ownership, and when a prescription was presented to a pharmacist it was not his place to inquire how the customer came into possession of it or who wrote it, but simply to faithfully compound and deliver the things called for by the prescription. The pharmacists declined being considered the agents of the physicians, and asked, if they were to accept the office of *agent* in compounding physicians' prescriptions, if the physician was ready, as *principal*, to become responsible for the acts of his agent? (We do not believe they are.)

The foregoing points will convey a fair idea of the extent of the discussion which was conducted in the most friendly, though at times emphatic manner. Now, the result of this conference was the unanimous adoption by the joint committee of the following code, which each committee promised to urge the association it represented to adopt without amendment. I wish here to note, that this action was had on March 31st, 1881, and that no member of the above joint committee had any knowledge of what was afterwards published (April 1st) in the journals as the "Antwerp Compromise" which this code resembles:

The undersigned, Physicians and Pharmacists of the District of Columbia, subscribe to and agree to be bound by the following code governing the relations between medicine and pharmacy:

1st. That we recognize medicine and pharmacy as distinct professions, whose advancement is promoted by maintaining them as separate callings. That each shall devote himself to his respective profession exclusively, and not, while avowedly following the one, infringe or trespass on the rights and privileges of the other.

2d. The renewal of certain prescriptions merely at the request of the patient or other person who may be ignorant of the evils attending the continued use of a medicine ordered for the occasion only, may, at times, lead to serious results to the patient, and should in such cases be prevented; therefore, whenever the physician, *for the above reason only, writes* on a prescription "*not to be renewed*," the pharmacist must be governed thereby and refuse to renew such prescription except on authority of its maker.

3d. That the Medical Association and the National College of Pharmacy of the District of Columbia are hereby requested and authorized each to appoint three of their members who shall together constitute a committee to hear and determine all complaints of violating any of these rules.

The Medical Association was called together four days after to hear the report of their committee, when, instead of the foregoing code, a lengthy report detailing the alleged grievances was adopted together with the following resolutions:

WHEREAS, it has come to the knowledge of the Medical Association of the District of Columbia, through information of several of its members, that a number of druggists of this city are in the habit of prescribing for and taking charge of cases of sickness; and

WHEREAS the "diagnosis and treatment of diseases belongs to the province of a distinct profession, and as a pharmaceutical education does not qualify the pharmacist for these responsible offices;" and

WHEREAS the renewal of certain prescriptions merely at the request of the patient or other person who may be ignorant of the evil results attending the continued use of a medicine ordered for the occasion only, may work serious injury to the patient; therefore, be it

Resolved, That the public welfare, as well as the best interests of both the profession of medicine and that of pharmacy, are opposed to druggists usurping the functions of the physician by prescribing or giving medical advice.

Resolved, That when the physician shall consider it desirable that a prescription should not be renewed,

he will write on it "Not to be renewed," and that prescriptions so marked should not be renewed by the pharmacist without the order of the physician.

Resolved, That members of this Association will withhold their support and patronage from such druggists as thus fail in their duty to their own profession, or disregard the directions of the physicians in reference to renewals.

Resolved, That the interests of the medical profession are safe in the hands of reputable pharmacists, who govern themselves according to the Code of Ethics of the College of Pharmacy of the District of Columbia.

Resolved, That professional courtesy between physicians and pharmacists demands that a due regard be shown towards each other in all matters pertaining to prescriptions, that neither may be unduly reflected upon nor compromised.

In justice to the gentlemen representing the Medical Association, it should be stated, that on the day before the meeting of their Association they addressed our committee a note advising us of the probable failure of our code before their Association. The report and resolutions as adopted by the Medical Association were printed in the daily papers, and immediately excited a lively criticism in the press and among all classes of people. The following editorial from the "Evening Star," April 9th, one of our principal daily papers, reflects very fairly the popular opinion in our community on the subject, and is given for this reason and not as expressive of the pharmacist's view, who does not claim the right to prescribe for the sick.

In the contest which has arisen between the medical society and the druggists of Washington it is likely that the sympathies of the public will be altogether with the latter class. There may be and probably are cases where compounders of prescriptions exceed the just limitations of their business, but to meet these it is unwise for the physicians to undertake to put the whole guild under a ban and to assume powers which do not belong to them and which they will find they cannot exercise. After a patient has bought and paid for a prescription there can be no doubt that it is his or her property, in law and equity, and n ither the physician nor the druggist has any proprietary right in or control over it. It is simply left by its owner with the latter, by usage, for convenience and reference. If it is desired to have it renewed, that would seem to be a question of safety and propriety between the patient and the druggist; and while it is possible that slight abuses may have been practiced occasionally in such connection, there is no reason to believe that the good sense of either party would allow them to assume proportions calling for any such arbitrary and sweeping action as is proposed for a remedy. Again, in the matter of furnishing certain kinds of medicines, or of giving advice in simple cases, either voluntarily or on request. These are things that will adjust themselves pretty satisfactorily, as a rule, and they cannot be regulated by any number or kind of resolutions that may be framed. People will be apt to go where they can be or think they can be served best, which is always the cheapest in the end; and it is by no means certain that they would always be worse off by taking the advice of a druggist instead of consulting a physician. Experience and observation are worth a good deal in any occupation, and nobody, we suppose, would pretend that a slightly sick person might not be better off sometimes in the hands of a good druggist than in those of a poor physician, no matter what the weight of diploma might be.

In the meantime the National College of Pharmacy, being advised of the action of the Medical Association, resolved to lay the whole subject on the table.

As may be seen, the resolutions of the Medical Association were directed against the pharmacists as individuals; it was therefore deemed proper to reply to them as such. Accordingly, the following reply was circulated among the pharmacists, and received the signature of every one to whom it was presented, save and except four. It was first presented to the President of the Medical Association, and subsequently a copy furnished the press for publication:

To the Medical Association of the District of Columbia:

GENTLEMEN—We have received and considered the report of the Committee on Relations between Physicians and Pharmacists, adopted by the Medical Association, April 4, 1881. In response thereto we beg

leave to state that as pharmacists we are not amenable to the Medical Association of the District of Columbia; have no voice in its management, and that to admit your power to enforce these rules so far as they seek to control us would be to acknowledge your right to govern us without consent, condemn us without trial, and punish us without appeal. Therefore, although our assent or dissent is not asked, we deem it due to ourselves to advise you that wherever the above report would impose conditions upon us not now recognized we do not accept it as in any way binding upon us. We take this occasion to reassure you of our readiness, now as in the past, to co-operate with you in all laudable efforts to protect the public from the danger attending the inconsiderate renewal of certain prescriptions, or any evil that may be shown to exist in either profession.

Signed by eighty-nine pharmacists, engaged in business in this city.

And thus the case rests for the present.

W. S. THOMPSON.

Washington, D. C., April 16th, 1881.

MASSACHUSETTS COLLEGE OF PHARMACY. — The thirteenth annual commencement was held in the hall of the College, April 13th, when the degree of Graduate in Pharmacy was conferred upon the following gentlemen: Herbert William Adams (Alum), Freeman Hall Butler (Aloes and Aloin), George Frederick Dinsmore (Spiritus Ætheris Nitrosi), George Ernest Fairfax Donkin (Spiræa Tomentosa), Edward Robert Godding (Syrup of Hydriodic Acid), Alie Greenberg (Calomel), Alfred James Hayman (Tartrate of Iron and Potassium), Joseph Bradford Locke (Oleoresin of Pepper), Arthur Dean Marcy (Instrument for Shaping Troches), James Whiting Page (Hydrocyanic Acid), Edwin Walter Shedd (Sulphur), Linville Holton Smith (Sodium Ethylate), Charles Sumner Soule (Purified Chloroform), Greenleaf Robinson Tucker (Hydrobromic Acid), Charles Crosby Williams (Bromide of Potassium; with Quantitative Analyses of Commercial Samples).

The following gentlemen have been granted their degrees of Graduate in Pharmacy, "with honors," for having taken and passed a satisfactory examination in the Elective Department of Practical and Analytical Chemistry: William W. Bartlett, class of 1873; Franklin E. Boyden, class of 1880; George E. F. Donkin, class of 1881; George F. Dinsmore, class of 1881; Edwin W. Shedd, class of 1881.

Addresses were made by the President, Mr. B. F. Stacey; Rev. O. D. Kimball; F. H. Butler, Ph.G., and Prof. B. F. Davenport, and prizes, consisting of books, were presented to H. W. Adams, Ph.G.; E. W. Shedd, Ph.G.; W. A. Chapin and T. T. Reid, the last two named belonging to the junior class.

This College, we learn, has made a course of laboratory instruction obligatory upon those intending to graduate.

ALUMNI ASSOCIATION OF THE CINCINNATI COLLEGE OF PHARMACY.— At the annual meeting, held March 16th, 1881, the following officers were elected for the ensuing year: President, Herman Serodino; Vice-Presidents, Louis Klayer and H. J. Marshall; Recording Secretary, J. Ferd. Zuenkeler; Corresponding Secretary, C. J. Lammert; Treasurer, Robert M. Kuerze; Executive Board for one year—E. Goodman, Louis Sauer; for two years—E. A. Pohlmeyer, Albert Wetterstroem.

Delegates to the American Pharmaceutical Association were likewise elected.

The Treasurer's report was read, showing a healthy condition financially.

Mr. Louis Schwab, one of the originators of the Association, delivered an elaborate address, in the course of which he paid a graceful tribute of respect to the memory of the lamented Professor William B. Chapman, deceased.

Essays were read in response to the following queries: Elegance in Pharmacy, What is it? by Mr. Al. Wetterstroem; What is the Best Mode of Percolating Gum Resins? by Mr. Heun.

The Gold Medal of the Alumni Association, offered annually for excellence in the General Examination, was this year awarded to Mr. R. Fay Dover, of Dayton, Ohio.

After the Commencement Exercises of the College a banquet was given in honor of the graduating class by the Association.

THE KANSAS PHARMACEUTICAL ASSOCIATION held a special meeting at Topeka, April 13th, mainly for the purpose of considering what action should be pursued under the prohibition laws recently enacted in that State. In the address of the President it was stated that the same legislative committee which reported in favor of prohibiting "everything, under whatever name it might be called, that would produce intoxication," refused to favorably consider a pharmacy bill placing the sale of medicines and poisons of the Pharmacopœia into the hands of druggists, because "some of the poisons and medicines would produce intoxication."

A committee reported the following, which was unanimously adopted:

WHEREAS, We, the Pharmaceutical Association, representing largely the druggists of the State of Kansas, having met for the purpose of considering our practical relation to the recently enacted liquor law, and disclaiming any intention of placing ourselves in antagonism or as an obstruction to the execution of the same, and

WHEREAS, The delegation under the said law, to the druggists of the State, of authority to dispense intoxicating liquors for the excepted purposes, is so hampered with restrictions and burdensome provisions as to render the trust attempted to be conferred a most delicate and dangerous one to the druggists of this State, however carefully and conscientiously they might attempt to execute it, the proper interpretation of the law being so uncertain, the bond required being so excessive, and the innocent bondsmen being probably liable to forfeiture of the amount executed in addition to the penalties of fine or fine and imprisonment imposed against the druggist himself in case of even the first technical violation of the law, and

WHEREAS, We understand that it is the wish of the State officials, as well as this Association, that test cases be made at an early date, to secure a proper authoritative interpretation of the disputed provision of the law, therefore

Be it resolved by the Kansas Pharmaceutical Association:

That we recommend to the druggists of the State that no application for permits covering the sale of intoxicating liquors be made, except for test cases, until the law shall have been so interpreted by the Supreme Court of this State as to make plain our status under it, particularly with reference to the provisions of sec. 10, and that in the meantime no sale of liquors be made.

Resolved, That the Executive Committee of this Association are hereby instructed to take such measures as shall most speedily result in a legal test of the provisions of section 10 and of such other portions of the present Temperance law as may be necessary for a clear and final interpretation of the law.

Arrangements were ordered to be made for receiving the American Pharmaceutical Association in August next, and after discussing various other subjects the Association adjourned.

EDITORIAL DEPARTMENT.

THE NECESSITY OF SYNONYMS.—On a former occasion (see "Am. Jour. Phar.," 1878, p. 204) we have called attention to the necessity of having officially recognized synonyms which the physician might use in those cases where the patient, for some reason or other, objects to taking a medicine the name of which he can decipher. This necessity, it seems, is being recognized in various localities, and probably is felt everywhere. A medical correspondent writes to us: "We practitioners frequently have the chagrining task of attempting to convince patients that quinine does not get into the bones; that strychnine is not always a poison; that Tommy's amaurosis is not due to the chloral you gave him when he was sleepless," etc. Every pharmacist of experience in dispensing prescriptions will be able to recall instances where patients were loath to have medicines prepared for similar cogent reasons. In Europe the old names, officially recognized in former periods, are not forgotten, and are, in cases of necessity, employed by the physician in prescription writing and understood by the pharmacist in compounding. A number of these names are, even at the present time, retained in some of the pharmacopœias as synonyms, as, for instance, meconium, thebaicum and laudanum for opium; tinct. thebaica and tinctura meconii for tincture of opium; oleum palmæ Christi for castor oil; syrupus domesticus for buckthorn syrup; vitriolum album, vit. cupri and vit. martis for the sulphates of zinc, copper and iron, etc.

Recently the Medical and Surgical Society of Baltimore has taken action in this matter, and proposed synonyms for a few drugs, to be used by physicians if deemed necessary or desirable, while those who do not feel the necessity may continue to use the officinal names in all cases. The synonyms proposed are,

for Chloral, Liebreich's crystals;	for Morphiæ sulphas, Serturner's sulphate;
" Quiniæ sulphas, Pelltier's sulphate;	" Opium, Thebaicum;
" Strychnia, Tetanum;	" Zinc, Speltrum.

It might be argued that the synonyms would soon become as commonly known as the terms they represented, but we believe such not to be the case. The U. S. Pharmacopœia now recognizes a number of (English) synonyms, such as black drop, Hoffman's anodyne, tartar emetic, kermes mineral, turpeth mineral, red precipitate, calomel, corrosive sublimate, etc., which represent the names by which these articles are commonly known; but we believe that these substances are rarely, if ever, known to the laity, also by the ordinary pharmacopœial designation; or, in other words, medicines are rarely, if ever, known to the laity by two titles.

It seems to us that the subject deserves attention, particularly of the physicians, who are more annoyed by the want of generally recognized synonyms than pharmacists, and the present time would seem to be favorable for the introduction of at least a few important ones into the forthcoming pharmacopœia; for, to be of real utility, such synonyms should be understood by all pharmacists and physicians.

FIFTH INTERNATIONAL PHARMACEUTICAL CONGRESS.—At the Fourth International Pharmaceutical Congress, which was held in St. Petersburg,

Russia, August, 1874, the majority, if not all, the delegates present were in favor of holding the next congress in London, England. During the month of August the International Medical Congress will convene in that city, and the Pharmaceutical Society of Great Britain deemed this to be a fit opportunity for inviting the International Pharmaceutical Congress to hold a meeting about the same time. Under date of January 1, 1881, the invitations have been sent out to the various pharmaceutical bodies and to prominent pharmacists in different countries, and no doubt can be entertained that the meeting will be a success, certainly as far as will concern the presence of representative pharmacists, and it is to be hoped likewise in regard to the number of nationalities represented. In 1874 only Russia, Austria, Denmark, England and France had sent delegates; but in the present instance it may be taken for granted that the favorable geographical position of the British metropolis, its commercial importance and the facilities for reaching it from all sections of Europe will induce many to go, not to speak of the numerous other attractions that will amply repay even a prolonged visit to London.

Whether the United States will be represented at the forthcoming congress we regard still as doubtful, from the information received, yet it is obvious that the pharmacists of this country must feel a great interest in the deliberations of this body, convening, as it does, in a country from which, in a great measure, we have derived the manner and conditions under which the practice of pharmacy is carried on. Aside from the time consumed in traveling to and attending such a meeting, many American pharmacists will find in the locality or section of country where the National Association will meet this year an inducement to forego the pleasure of making the personal acquaintance of distinguished *confrères*, the more so since the meeting in Kansas City will likewise convene in August.

The nature of the questions to be discussed has not yet been determined, yet it may be taken for granted that the subject of an international pharmacopœia, which has claimed the attention of three previous congresses, and to accomplish which the Pharmaceutical Society of Paris has expended much labor, will receive due attention. Several years ago we stated our opinion that the attempt should be directed towards the uniformity of the strength of the most active and important drugs and preparations, and we see no reason for changing our view. Those who have compared the strength of preparations bearing the same name in different pharmacopœias will readily acquiesce in the importance of this subject.

At the present time quite a number of the different national pharmacopœias are either undergoing a revision or the preliminary steps for such a revision have been taken. It would seem natural that an interchange of views should be sought on such a favorable occasion, regarding the periodicy of pharmacopœial revision, the part to be taken therein by the individual pharmacists and the pharmaceutical societies, and numerous other points.

Pharmaceutical education, in all its bearings, is likewise a theme which, as on former occasions, may in some form or other come up for discussion; in fact the field is a very extensive one, and it will be by no means an easy task to select that which to all would seem to be of primary importance.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Proceedings of the American Pharmaceutical Association at the twenty-eighth annual meeting, held in Saratoga Springs, N. Y., Sept., 1880. Philadelphia: Sherman & Co., printers, 1881. 8vo, pp. 661.

The first part of this volume consists, as usual, of the report on the Progress of Pharmacy, by Prof. Diehl—it covers 366 pages; then follow the committee reports and papers read at Saratoga, covering 130 pages, the remainder being the minutes (180 pages), constitution and by-laws, roll of members, etc. The frontispiece is an excellent likeness of the late Prof. Wm. B. Chapman, of Cincinnati, it being a phototype prepared by F. Gutekunst, of Philadelphia, from a card photograph of the deceased.

Proceedings of the Missouri State Pharmaceutical Association, held at Moberly, Oct. 26, 1880. 8vo, pp. 16.

After the reports of the various officers and committees had been read, the following officers were elected: R. T. Miller, of Sedalia, President; A. R. Edmunds, of Miami, H. M. Pettit, of Carrollton, and H. C. Churchill, of Windsor, Vice Presidents; A. M. Fulkerson, of Clinton, Secretary; P. H. Franklin, of Marshall, Treasurer, and Wm. T. Ford, of Kansas City, Corresponding Secretary. Kansas City was selected as the place of the next annual meeting.

Mr. J. J. Slack, of Sedalia, read a paper on the preparation of syrups by percolation. The draft of a pharmacy law for Missouri was considered and its passage advocated. Through the efforts of the officers of the Association the bill was passed by the legislature, and goes into effect June 26, next.

Proceedings of the Convention of Druggists, and of the first Meeting of the Illinois Pharmaceutical Association, held at Springfield, Dec. 7 and 8, 1880. 8vo, pp. 87.

A brief account of this meeting will be found on page 91 of our February number. The pamphlet before us contains the discussions in full. The roll of members published shows that a large number of the pharmacists and druggists are lending their support to the objects of this State Association.

The Metric System in Medicine, containing an account of the metric system of weights and measures, Americanized and simplified; a comprehensive dose-table and 300 practical illustrations of metric prescription writing, selected from recipes in actual use in hospitals and out-door practice. By Oscar Oldberg, Ph.D., etc. Philadelphia: Presley Blakiston, 1881. 12mo, pp. 182. Price, $1.50.

On page 364 of this journal for 1878 we called attention to the introduction of the metric system into the U. S. Marine Hospital service by order of the late Surgeon-General J. M. Woodworth, sanctioned and approved by Secretary Sherman. This step had been rendered practicable in consequence of the lucid elaboration of the metric system for the practical use of physicians by the author of the present volume, and experience, we believe, has shown that a full and correct knowledge of the system may be acquired and applied with comparatively little difficulty.

Since the author has been in the position to observe the facilities and difficulties of the introduction of the metric system into practical use, a useful and practical work may be expected from him, and we may be permitted to state at the outset that those who will peruse the above book will find it not only very instructive, but also very profitable and convenient.

The simplification of the system for practical use in America consists in abandoning the usual terms for the subdivisions of the gram, and substituting in their place those terms with which everyone is familiar, and which, being taken from our monetary system, are equally applicable to weight; accordingly 0·1 gm. or a decigram would become a *dime;* 0·01 gm. or a centigram would be a *cent*, and 0·001 gm. or a milligram would be a *mill.* These terms and their relation to one another are certainly understood by all; special terms for multiples of the gram are, at least in prescription writing and compounding, entirely unnecessary.

For fluid measures the author has adopted the suggestion of Mr. A. B. Taylor (see "Am. Jour. Phar.," 1877, p. 204), to use the brief and descriptive word *fluigram* in place of cubic centimeter. Of its subdivisions only one, the *fluidime*, would be practically required, this being equivalent to 1½ minim.

It will be impossible to follow the author, in this brief review, into the various expositions of the measures of length, weight and capacity, or even to indicate the nature and practical usefulness of the numerous tables prepared to show at a glance the relation of the new and old systems, among the latter including also the British imperial measure.

Of the ready applicability of the metric system, with the proposed Americanized terms indicated above, the more than 300 prescriptions published give ample proof; likewise the posological table, giving the doses in apothecaries' weights and measures and in metric terms, as will be seen from the following examples:

Acid. hydrocyan. dil.,	2 to 6 min.	1 to 4 fD.
Atropina (and salts),	$\frac{1}{150}$ to $\frac{1}{30}$ gr.	0·5 to 2 mills.
Camphora,	1 to 10 gr.	5 to 60 cents.
Fluidextr. ergota,	15 to 60 min.	1 to 4 fGm.
Opium,	$\frac{1}{8}$ to 2 gr.	8 mills to 10 cents.
Potass. chloras,	8 to 30 gr.	50 cents to 2 Gm.

The work is written and arranged in such a manner that it is readily understood, and may be consulted with great convenience. For popularizing the introduction of the metric system into medicine, Prof. Oldberg has rendered another signal service.

An Unofficial Pharmacopœia; comprising over 700 popular non-official Preparations, and containing an Account of the Metric System of Weights and Measures, Americanized and simplified; a comprehensive Dose Table, and 300 Practical Illustrations of Metric Prescription Writing, etc. By Oscar Oldberg, Ph.D., etc. Philadelphia: Presley Blakiston, 1881. 12mo, pp. 503. Price, $3.50.

This work contains the whole of the preceding work, from the pen of the same author; but several useful tables have been added, and illustrations and brief descriptions of metric weights and measures. The chief

addition, however, consists of a *formulary* (we should have preferred this title to the one chosen by the author) for a large number of preparations contained in the British, French, German and Swedish Pharmacopœias, or which are not recognized by any Pharmacopœia, but are employed more or less in the United States. The nomenclature employed is the one advocated by the author in a paper read before the American Pharmaceutical Association at Saratoga, and proposes to use all Latin names in the nominative case. The formulas are arranged in groups, either according to their pharmaceutical nature or chemical composition. The nature of these formulas will be best understood by quoting a few examples:

Liquor Pectoralis—Elixir Pectorale—Pectoral Drops.

Purified extract of liquorice, twenty grams,	20
Fennel water, sixty fluigrams,	60
Volatile oil of anise, fifty cents,	·50
Alcohol (0·830 sp. gr.), sixteen fluigrams,	16
Water of ammonia (0·96 sp. gr.), three and one-half fluigrams,	3·50
	100

Dissolve the extract in the fennel water, and the volatile oil in the alcohol. Mix the solutions, and, finally, add the water of ammonia.

Mixtura Rheum Composita (Brooklyn)—Compound Rhubarb Mixture.

Fluidextract of ipecac, four fluigrams,	4
Fluidextract of rhubarb, twenty fluigrams,	20
Bicarbonate of sodium, forty grams,	40
Glycerin, three hundred and fifty fluigrams,	350
Peppermint water sufficient to make one liter,	1000

Dissolve the sodic bicarbonate in 600 fluigrams of peppermint water; then add the other ingredients and sufficient peppermint water to make the whole measure one liter.

Linctus Calx Chlorata—Chlorinated Honey (Ph. Su.)

Chlorinated lime, five grams,	5
Water, four hundred and ninety-five fluigrams,	495
Honey, purified, five hundred grams,	500
Mix.	1000

Pilula Plumbum cum Opio—Pill of Lead and Opium (Br.).

Plumbic acetate, in fine powder, seventy-two grams,	72
Opium, in powder, twelve grams,	12
Confection of roses, sixteen grams,	16
Mix.	100

Compound Elixir of Sumbul (D. C.).

Fluid extract of sumbul, fifty fluigrams,	50
Alcohol (0·820 sp. gr.), one hundred fluigrams,	100
Elixir of valerianate of ammonium, five hundred fluigrams,	500
Elixir of orange, three hundred and fifty fluigrams,	350
Mix.	1000

The values of all the formulas where it was necessary have been calculated with great care into the practical metric equivalents, the result being either 100 or 1000 parts.

Besides the intrinsic value of the work, its external appearance deserves, likewise, commendable notice, as well as the care bestowed upon the proof-reading, but very few typographical errors having been noticed by us.

A Treatise on Albuminuria. By W. Howship Dickinson, M.D., Cantab., etc. Second edition. 1881. 8vo, pp. 300.

A Treatise on the Materia Medica and Therapeutics of the Skin. By Henry G. Piffard, A.M., M.D. 1881. 8vo, pp. 351.

A Treatise on Diseases of the Joints. By Richard Barwell, F.R.C.S., etc. Second edition. 1881. 8vo, pp. 463.

The above works form the first three volumes of the series of the present year published by Wm. Wood & Co., of New York, under the general title of "Wood's Library of Standard Medical Authors." As far as the contents of the volumes are concerned, the names of the authors are sufficient evidence that treatises of value may be expected from them. In Prof. Piffard's work attention is directed to quite a number of remedies which are little known in the United States and some of which were formerly officinal in various Pharmacopœias; we mention the following as illustrations: Acanthus mollis, Anemone nemorosa, Caladium seguinum, Calotropis gigantea, Cassia alata, Galega officinalis, Heliotropium majus, Hura brasiliensis and crepitans, Hydrophyllum canadense, Lapsana communis, Sedum acre, Sempervivum tectorum, Xanthium strumarium and others.

These works are presented by the publishers in a very attractive style, printed in clear types upon good paper, and wherever necessary illustrated by woodcuts and by well executed colored plates. They form a handsome and very useful series at a very moderate price.

Index Medicus. Published by F. Leypoldt, New York.

We have on several occasions noticed this valuable periodical, which gives a complete index of all publications, whether in book form or printed in journals, relating to medicine. It is therefore invaluable, owing to its completeness and excellent systematic arrangement, to medical men generally, and to the faithful investigator and observer in particular. The publication, edited by Drs. Billings and Fletcher, deserves by far greater encouragement than it has hitherto received. It would seem that medical libraries and societies were sufficiently numerous in this country to insure the continuance of a periodical which will always retain its value, and the suspension of which would prove an irreparable loss to the entire profession.

The Microscope, and its Relation to Medicine and Pharmacy. Edited and published by Chas. H. Stowell, M.D., Assistant Professor of Physiology and Histology, University of Michigan, and Louisa Reed Stowell, M.S., Assistant in Microscopical Botany, University of Michigan. Detroit: Geo. S. Davis.

It affords us great pleasure to notice the appearance of this new bi-monthly journal, the first number of which appeared in April. It is a well printed pamphlet of 32 octavo pages text, and is published at the rate of $1 a year. Of special interest to pharmaceutical readers is the essay of the editress on

ipecacuanha, its structure and adulterations, which, as a matter of course, is illustrated, like two or three other papers. We believe that there can scarcely be a question as to the desirability, if not necessity, of a journal specially devoted to the application of the microscope in medicine and pharmacy, and the projectors and editors, being well known in this line of investigation, will doubtless make the "Microscope" a welcome visitor to all who appreciate the importance of the instrument that has opened a new world to the inquiring scientist, and the importance of which is being continually more appreciated.

On Quebracho Bark (*Aspidosperma Quebracho*). Botanic-pharmacognostic essay. By Dr. Adolph Hansen, Assistant at the Botanic Institute of Erlangen. Detroit: Geo. S. Davis.

This essay is referred to in the paper on Quebracho bark by Prof. E. Schaer which we publish in the present number. The pamphlet before us is a translation of Dr. Hansen's paper, covers 13 quarto pages and is illustrated by three plates containing 25 lithographic figures of a flowering twig of the plant, of the bark (colored) and of microscopical views of the histological structure of the bark and wood.

Chemisches über die Samen von Xanthium strumarium. Von Arthur Zander. Dorpat, 1881. 8vo, pp. 36.

Chemical investigation of the seeds of Xanthium strumarium.

The fruit of this plant, commonly known as cocklebur, has been used in 1879 near Ssaratow, Russia, as food, and also for expressing the fixed oil. The use of the fruit and oil caused serious illness, and in four cases death, which results were attributed to the cocklebur and induced Dr. Zander to endeavor the isolation of the supposed poisonous principle. Experiments with the different principles made on frogs and cats gave no results; the author swallowed 1·5 gram, equal to about 50 of the akenes, in the form of powder, likewise without any unusual effect.

The results of the analysis were moisture, 5·44; ash, 5·18; fat, 38·60; resin, containing some fat, 2·38; saccharose, 3·31; albuminoids, 36·64 (of which 9·43 were soluble in water, 24·41 soluble in caustic soda and 2·81 insoluble in both menstrua); nitric acid, 0·68; ammonia, 0·06; xanthostrumarin and organic acids, 1·27; extractive substances, 1·56; cellulose, 1·52; cuticular substances, loss 2·40.

Owing to the readiness with which it is decomposed at a moderate heat with the production of an odor resembling that of valerianic acid, the whole amount of xanthostrumarin could not be obtained. In the purest state obtainable it was light yellow, amorphous, free from nitrogen, soluble in water, alcohol, methylic alcohol, amylic alcohol, ether, benzol and chloroform, colored dark-yellow by alkalies, not precipitated by tannin or gelatin, and yielded precipitates with ferric chloride dark-green, with cupric acetate green-blue, with lead acetate lemon-yellow, with platinic chloride red-yellow, with auric chloride brown, with mercuric chloride light-colored dirty, with potassio-mercuric iodide brownish-yellow, with iodine in potassium iodide dark-yellowish brown, with potassio-bismuthic

iodide orange-red, with phosphotungstic acid light-colored dirty, with picric acid yellow, with zinc acetate lemon-yellow. Fröhde's reagent colors red-brown; sugar and sulphuric acid gradually violet-red, lead peroxide and sulphuric acid red-brown, ferric chloride (or sodium hypochlorite) and sulphuric acid yellow, becoming carmine-red. On boiling with dilute acids, sugar is produced.

Beiträge zur Chemie der Laubmoose. Von Eduard Treffner. Dorpat, 1881. 8vo, pp. 62.

Contributions to the Chemistry of the (leafy) Mosses.

The author has analyzed Ceratodon purpureus, Climacium dendroïdes, Dicranum undulatum, Funaria hygrometrica, Hypnum splendens, Mnium affine, Orthotrichum anomalum, Polytrichum commune, Schistidium apocarpum, and Sphagnum cuspidatum. Of these, the analysis of Polytrichum commune, which with one or two allied species is occasionally employed medicinally, possesses special interest. The author found in the air-dry moss: moisture, 15·62; ash, 2·698, with soluble silica, ·565; sand, ·197; fat, ·8; chlorophyll and wax, ·86; resin, ·35; compounds soluble in water, 9·6 (of which, glucose, 5·87; saccharose, ·73; organic acids, 1·815; tannin-like compounds, ·035; albuminoids, ·994; the balance being ammonia, nitric acid and mucilage); metarabic acid, ·95; albumin, soluble in soda, ·181; other substances soluble in soda, 1·029; pararabin, 1·18; other substances soluble in HCl, ·595; albumin insoluble in water and soda, 3·794; the remainder being lignin, cellulose, etc.

Ueber das Verhalten einiger Antiseptica zu Tabaksinfusbacterien. Von Nicolai Schwartz. St. Petersburg, 1881. 8vo, pp. 46.

On the behavior of some antiseptics to the bacteria of tobacco infusion.

The investigations were made in the laboratory of the pharmaceutical institute of Dorpat. The nourishing liquid was a solution of 10 grams white sugar crystals, 1 gram of ammonium tartrate and 0·5 gram of potassium phosphate in 100 cc. distilled water. 20 cc. of this liquid were infected with 3 drops of infusion of tobacco, about two days old and turbid from numerous active bacteria. The most active antiseptic tried was picric acid (1 in 10,000 to 15,000); then followed iodine, sodium borosalicylate, hydrocyanic acid and alumium acetate (1 in 5000); oil of cinnamon (1 in 2500); arsenic acid, cinnamic acid and vanillin (1 in 2000); chloralhydrate, chrysophanic acid, and rhinacanthin (1 in 1000); tannin and Peru balsam (1 in 666); styracin, camphorated phenol (see "Amer. Jour. Phar.," 1875, p. 84), oil of cloves, copaiva and gurjun balsam (1 in 500). The following had to be used in more concentrated form: gallic acid, monobromated camphor, boric acid, borax, magnesium, mono- and di-borocitrate, benzohelicin, mongumic acid, peonyfluorescin, zinc sulphocarbolate, potassium xanthogenate and potassium chlorate. Glycerin was active only in the dilution of 1 : 3, and sublimed sulphur, magnesium triborocitrate, salt petre, chloroform, salicin, bile and sulphuretted hydrogen possessed only a slight or indifferent activity.